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A New Attachment to Sewing Machines.

We have lately been shown a novel and ingenious piece of mechanism. It is intended to make an elastic loop stitch, and does, in addition, some of the most beautiful embroidery we have ever seen.

In design this machine is entirely original, and in the execution of its work most satisfactory. While it is capable of performing all the ordinary work usually done on Grover & Baker's and Wheeler & Wilson's machines, it also produces an entirely new and beautiful stitch peculiar to itself. This is done with three threads, and the effect in colored silks is certainly beautiful. The threads are much raised from the surface and so interlaced that they appear to be braided, and, if the pattern is a handsome one, the appearance of the garment so treated is striking and pleasing. The attachment is illustrated in this number of our paper, and it is shown applied to the machine in Fig. 1, very nearly the full size. In Fig. 2 a front view is presented, and in Fig. 3 the inside is given, so that the reader will have a clear idea of it from several points.

It is as simple as can be. All there is of it is a vibrating thread carrier, C, working in an ornamental frame, A, which supports all parts; an arm, B, to drive this thread carrier, and a lever, D, which also drives the thread carrier, C, from the arm, B. The whole is worked by the feed cam on all Wheeler & Wilson machines. The rest of the fixtures are those commonly found on all sewing machines. As, for instance, the spool is sustained by the plate, F, and the tension regulated by the disks, G, and nut, H. At J is the ring slide for holding the Wheeler & Wilson bobbin, and the slot, K, receives the screw which holds the ring slide in place on the machine just named.

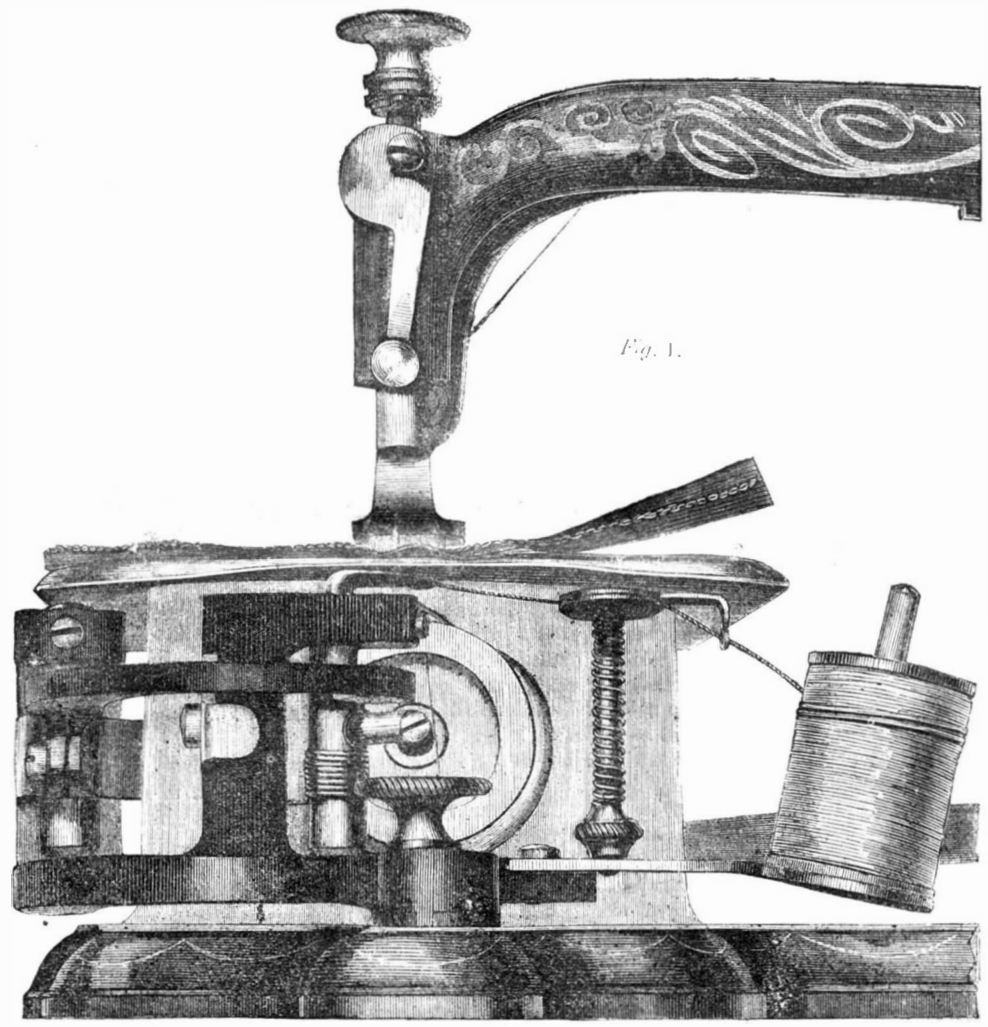


Fig. 1.

THREE-STITCH AND EMBROIDERING ATTACHMENT FOR THE WHEELER & WILSON SEWING MACHINE.

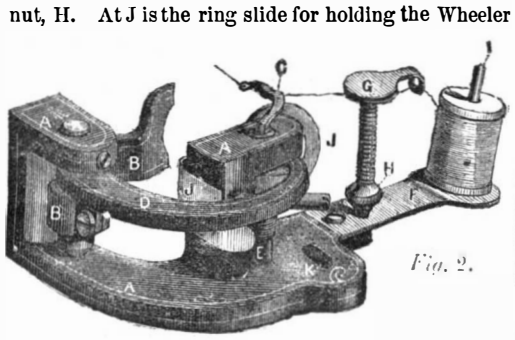


Fig. 2.

When used, the common ring slide is taken off, and this appliance put in its place; that is all the adjustment required beyond the setting of the attachment to suit the machine it works on. After that, it may be taken off and put on without any alteration or re-setting. A great advantage is, that the thread can be taken from the spool direct, without any winding, so that for common sewing it is a great saving of time to use it. For fancy work, however, it is unrivaled, and we expect to see a new era in the ornamentation of robes, opera cloaks, hoods, children's dresses, and the endless catalogue of domestic finery ladies are always busy at.

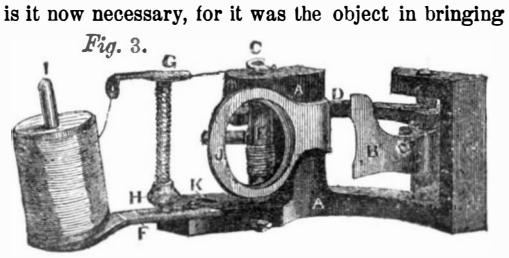
For want of space we are obliged to forego the pleasure of dwelling longer on this little attachment, for it is always agreeable to speak of mechanical inventions that are really useful and ingenious. The manufacture is to be carried on extensively by the best workmen money can procure.

The machine itself is the subject of three patents, dated respectively March, 1864, June 13, 1865, and September, 1865, and was invented by John J. Sibley, one of most celebrated experts in sewing machines and their several parts, in this country. The patent was purchased from him, and a company formed to put it in the market, under the style of "The Bruen Manufacturing Company," who are now bringing their machines out as fast as tools can make them. The machines are all made upon the system usually adopted in armories, each part being a duplicate of the other, so that uniformity is guaranteed.

The management of this attachment is easily learned by any one. There are no peculiarities about it not common to sewing machines generally. By this we mean that there are no *new* disorders. We all know that threads will break, and that a poor quality of it will sometimes refuse to run through the needle, but with this attachment the machine remains the same as it was before. Even if embroidery be not desired, it is certainly economical, in point of time, to use the thread directly from the spool, instead of winding it on a bobbin and having to stop in the middle of a seam to refill it, as is sometimes the case. The red, white, and blue, may run in mazy patterns over any fabric, and the thinnest and finest material can be as easily sewed as the heaviest.

It would seem as if invention in the line of sewing machines, and appliances to render them capable of a great variety of work, had nearly exhausted itself, and that but few changes could be made to enhance their value. The attention of many skillful men has been directed for a long time to the point accomplished by this machine—that is, to make the two kinds of stitch most approved, and now done by separate machines—but up to the present time this is the only one capable of doing it, and the end is attained in the most direct manner; not by making an entirely new machine, as some could have done, but through the agency of a simple combination of parts that can be put on those now owned. Some families who can afford it, have two different styles of sewing machines expressly for the peculiar purposes each was designed for, but there are not many who could bear the expense of this. Neither is it now necessary, for it was the object in bringing this attachment forward to make it available for all general purposes.

Fig. 3.



The public are cordially invited to call at the office of the Company and witness the working of the attachment. Price of attachment with the Company's new improved cloth plate, having changeable needle plates for fine and coarse work, $15.

For further information address the Bruen Manufacturing Company, No. 571 Broadway, New York.

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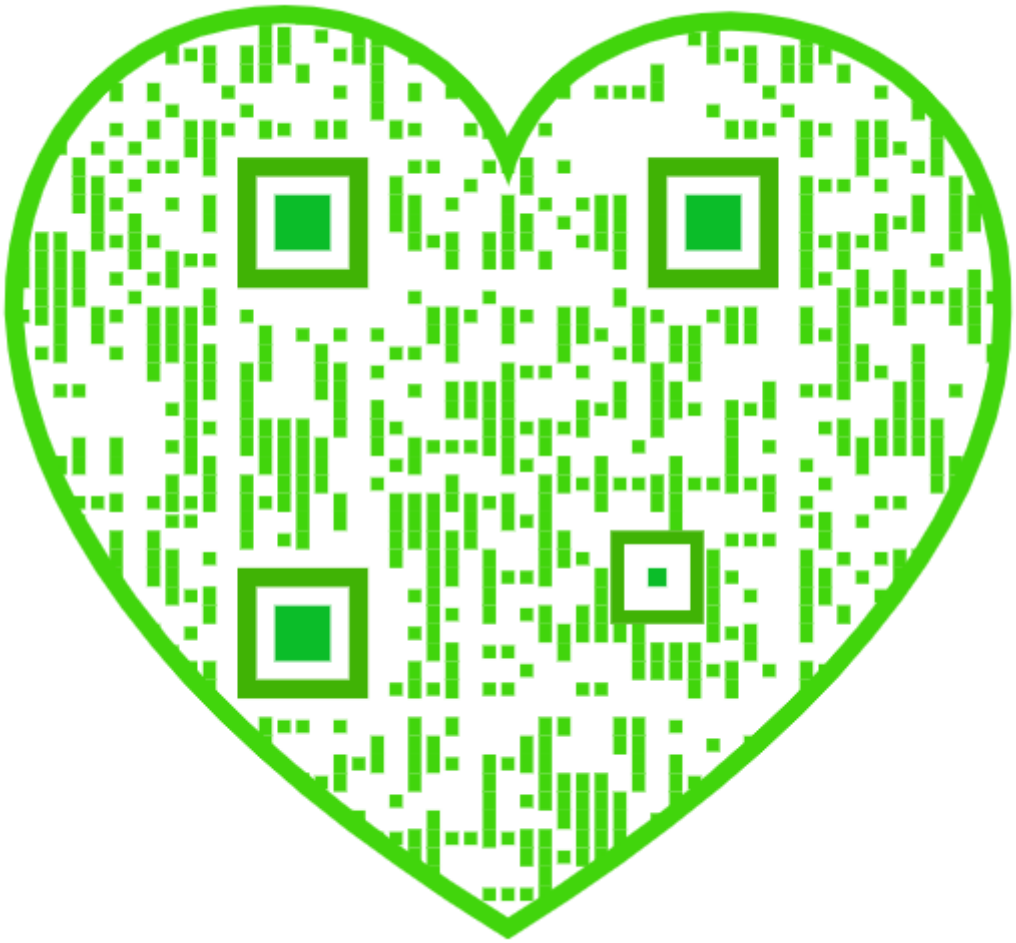

WORKSHOPS OF MANCHESTER, ENGLAND.

BY MR. JAMES G. FLETCHER.

Forty-five years ago, at the commencement of the writer's career as a mechanic, tools were of a very rude and primitive description, the lathe and drill being about the only ones then in general use; slide lathes were possessed only by a few persons, being made with great labor and expense, and very inferior in point of workmanship.

The introduction of the planing machine, however, and its subsequent development, effected an entire change in the manufacture of tools and machinery of every class, giving the means of carrying out with facility many works which had been left unattempted previously as too expensive or impracticable, and opening the way for improvements and invention generally; and in a short time these machines became indispensable in every workshop. The slide lathe became then comparatively easy of manufacture, and, in conjunction with the planing machine and self-acting drill, formed a most important feature in the advancement of engineering work. Still, much remained to be effected; a large proportion of work was done by hand, especially the smaller portions of machinery, untill slotting and shaping machines were brought into use, and special tools adapted for all parts where quantity of work was required to be produced. By the gradual introduction and perfecting of the regulator screw, the wheel cutting engine, standard gages, large surface plates, long straight edges, and scraped surfaces, combined with the improved tools, not only was the amount of manual labor considerably diminished, but the work was done more expeditiously, and a much greater degree of accuracy was attained, whereby the workmanship in all classes of machinery was remarkably improved, and at a great reduction in cost.

Another important feature in connection with improved tools, is the direct application of steam power to individual machines, especially those for the purpose of punching or shearing plates or cutting bars, etc., by the combination of a small steam engine with each machine, thus rendereng the machines portable entirely self-contained, and independent of other sources of driving power, and thereby saving, in many instances, the necessity of running a large engine and quantity of shafting to drive only one or two machines when pressed for the work upon which they are engaged, and entirely dispensing with shafting and the usual attendant expenses. By this means, and by the use of an under-ground steam pipe with branches at convenient points, either in workshops or along the sides of docks, these machines may be moved about to any part required, and thus obviate the inconvenience and loss of time in carrying work to and from the machines. Steam pipes of great length are now being used, and are found very satisfactory for purposes of this description; and this plan makes a much more convenient and less costly arrangement than shafting, which requires constant attention.

In the earlier construction of the lathe, the slide rest was the first great step toward the principle of the slide lathe, and no doubt led to that invention, which was considered impracticable before planing machines were made of sufficient magnitude to plane a lathe bed of even small dimension. A few slide lathes had indeed been made, the bed of which were composed of a timber framing, covered with iron plates on the upper side to preserve the surface, similar to those which were previously used for the ordinary hand lathes, with the exception that the outer edges of the iron plates were made of suitable shape to form the Vs for the carriage to slide upon. It was not, however, until some time after the introduction of the planing machine that (the cost of workmanship being considerably lessened) slide lathes came into general use, and their utility was fully acknowledged, and attention directed to their improvement.

The application of a screw to the slide lathe, so as to render it capable of both sliding and screw-cutting, was the next important improvement; and a great amount of time, perseverance, and capital was expended by a few persons in endeavoring to perfect this portion of the lathe. A short screw was first made, as accurately as possible with the rude means then possessed, from which one was cut double the length, by changing the turned bar end for end in the lathe after cutting one-half. Subsequently, by following out this principle, screws were capable of being made of any length required.

After this, the surfacing motion was introduced, and also the use of a shaft at the back of the lathe, in addition to the regular screw, for driving the sliding motion by rack and pinion, instead of both the motions of sliding and screw cutting being worked by the screw alone; for it was found that the threads of that portion of the screw nearest the fast head stock, being most in use, were worn thinner than the other parts; and, in consequence, the lathe did not cut a long screw with the degree of accuracy which it otherwise would have done.

Thus, step by step, improvements were gradually brought forward; the fore jaw and universal chucks and other important appliances were added, so as to render the lathe applicable to a great variety of work, even cutting spiral grooves in shafts, scrolls in a face-plate, skew wheels, and also turning articles of oval, spherical, or other forms. The duplex lathe, with one tool acting in front and the other behind the work, is also found to be a very useful arrangement for turning long shafts, cast-iron rollers, cylinders, and a great variety of work, where a quantity of the same kind and dimensions has to be turned.

The planing machine is one of the most important tools in use, and has done more toward the advancement and success of engineering work than any other invention, with the exception of the lathe, and has passed through a great number of changes since its first introduction down to the present time. In the first planing machines the table was moved by a chain winding on a drum, as in the old hand machines; this mode was found to be very objectionable, the cut was unsteady, and, when the tool was suddenly relieved at the end of its cut, the table had a tendency to spring forward; it was also driven at the same speed both forward and backward, and thus a great loss of time was occasioned. This was much improved upon by the use of a rack and pinion, arranged to give a quick return motion, and also afterward by the screw arrangement.

In some of the earliest planing machines the Vs were made inverted, evidently with the idea of preventing any cuttings that fell upon the wearing surfaces from remaining upon them. They proved, however, to possess no advantage even in this particular, as the finer portions of the cuttings still adhered; and in addition it was found that, from the motion of the table, the oil, by its own gravity, would not remain upon the surfaces, and thus caused them to cut and wear away quickly.

The writer has in use a planing machine, with a bed 54 feet long, the Vs of which have two inches of surface on each side, and are planed to an angle of 85 degrees. This machine has been working upward of twenty years, and for the last six years both night and day. It has been employed during the whole of that time upon very heavy work, ranging from 5 to 20 tons. The Vs are still in good condition, apparently very little worn, and the work the machine does is at the present time perfectly true. The bed is in three parts jointed and bolted together, and the table in two parts, since, at the time it was made, there was no machine capable of planing a very long piece, and this was considered to be one of the largest then in existence.

The planing machines were further improved by the use of two tool-boxes on the cross-slide, and by the application of slide rests or tool-boxes fixed upon the uprights, self-acting vertically, for planing articles at right angles to the tools on the cross-slide. The reversing tool-box is a very ingenious and useful contrivance for planing flat surfaces; but that plan is not so well adapted for general purposes. Planing machines have, like other tools, been specially adapted to a great variety of work, and the writer has made them with different numbers of tools, up to as many as sixteen, all of which were in operation at once.

The great changes which have lately taken place in the manufacture of wrought-iron and steel ordnance, and the revolution they have caused in the construction of vessels of war, have called into requisition a great many alterations and adaptations of the present machines, as well as many entirely new ones. The planing machine especially has been called upon to do work of a very curious and intricate character, namely, that of planing the edges of armor plates to different curves, shapes, or angles. In most cases this has been accomplished by a pattern bar of iron or steel, placed on edge in a small chuck fixed upon the surface of the table, adjustable by set screws, and shaped to the form to which it is required to plane the edge of the plate; as the table travels, this bar, which runs between two circular rollers attached to the under side of the cross-slide, moves the tool sideways, according to the amount of curve in the shaper or guide bar, the tool-box being disconnected for this purpose from the screw in the cross slide.

A duplex planing machine, made by the writer, is arranged with double beds and double tables, each table having a separate set of gearing, with starting, stopping, and feed motion. There are two tool boxes on the cross-slide, each of which is independently self-acting, so as to work with its own table. Thus the two tables may be used separately as two smaller machines working independently of each other, and capable of planing different lengths of work at the same time; or when planing a large article, the two tables, gearing and motion, may be coupled, so as to form one large machine, an arrangement rendering the machine capable of doing a variety of work. Also one table may be fixed stationary as a bed-plate to bolt awkwardly-shaped or long pieces of work upon, while they are planed by a slide rest fixed upon the other table. When used as one machine, both sets of straps and gearing are in operation, and are reversed by the stops of one table only, so as to insure the straps moving at the same time.

This machine is capable of planing articles 10 feet wide and 10 feet high. The racks on the under side of the tables are 3 inches pitch, with stepped teeth; the wheel working into the rack is 3 feet 9 inches diameter at the pitch line, and is driven by a smaller pinion. By this arrangement a steadier motion is obtained; and also the pulleys and driving gear can be placed entirely behind the face of the uprights, so as to leave the front of the machine perfectly clear, that the straps may not be in the way when taking the work off and on. The pulleys being below the ground line, may be driven by a horizontal under-ground shaft at the back of the machine, and no straps will then be visible. The writer has made machines of this description with beds 40 feet long, to plane work up to 14 feet in width.—*Newton's London Journal.*

ENGINE-ROOM SKYLIGHTS.

In the autumn and winter of 1862 and 1863, when so many Baltic steamers were lost, we pointed out, from the facts reported bearing on each disaster, that most of them foundered from the seas breaking through the engine-room skylights, putting out the fires, and thus stopping the machinery. As the engines work the bilge pumps the ships cannot be kept free, for the water taken in-board is so great that is impossible for the deck pumps, worked by hand, to keep it under. We stated our opinion then that no steamer ought to be sent to sea without having means at command to secure the deck openings, and we see no reason to alter our views. The *London* might have been pursuing her course in safety across the ocean at this moment, could the water which rolled over her bulwarks have been kept out of the engine department. It was, no doubt, thought that in so large a ship the waves falling in-board would never create such havoc, and that the fastenings of the skylight were sufficient for a vessel of her size. Events have proved that the weight of water tumbling on a ship's deck will smash stout glass and comparatively light frames, even though there is a covering of tarpaulin. The skylight of the *London* was 12 feet 6 inches by 9 feet 6 inches. The frame or sash was of teak wood, over three inches thick, and it was glazed with half-inch glass, each plate 12 inches by 9 inches. To protect the sashes from damage, there were round iron rod bars, forming a grating in the manner so commonly to be met with. This skylight slid in a rabbit of one and a-half inch, and the combing was of teak, rising sixteen inches from the deck, and five inches in substance. Such a skylight was sufficient for fine or moderate weather, but not adopted to withstand the force of such seas as were dashed by the wind against it. Waves in bad weather sweep ships' decks,

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and carry away boats, cooking-houses, and deck spars; but so long as a vessel keeps tight, and the water is carried off through the washboards and scuppers, there is no danger to the hull. The mischief arises when the water from above falls below in quantities that cannot be pumped out fast enough to keep the ship buoyant, as in the case of the *London*. Mr. Greenhill, her second engineer, states that, when the sea broke aboard, some of the glass and teak fell into the engine-room, which affords strong evidence of the power of a body of water, when projected violently against an object, to sweep all before it. It may be argued that the skylight of this ship was weak; but, if we compare it with other vessels of greater tunnage, we shall find that is above the average strength. The *London* might possibly have made many voyages, and even been worn out in the service, without her engine hatchway being put to such a severe test. But where a ship is caught in a hurricane at sea, she is sure to be well battered with the waves, and there is no provision that can be made to prevent the seas from breaking against her and falling over the rail. Everything on deck, therefore, that acts as coverings to keep the water from the hold, should be firmly fixed. The cargo hatches are always covered and battened down, and, not rising many inches above the flooring of the deck, there is very little leverage for the rolling water to act upon. It is different, however, with lofty saddle skylights. They are struck from the sides, and the seas at times fall perpendicularly from a great hight.

Mr. G. J. Gladstone, sen., Surveyor to the Port of London, when questioned, said that he considered the bars of the skylight and the tarpaulin a sufficient protection, and that it did not occur to him to have slides or hatches. Mr. Maxwell, the foreman of Messrs. Humphrey & Tenant, the makers of the ship's engines, in reply to a question, said that hatches flush with the deck could not have been used in the *London*, without interfering with the action of the piston rod; and Captain Harris read an extract from a letter of a gentleman connected with a shipping establishment, in which it was stated that there was nothing superior to the tarpaulin, for there had never been an instance of any of the skylights of the Company's ships being injured by a sea. The Surveyor, Engineer, and Superintendent are representatives of their classes. One did not look to engine-room fastenings for hatches; the second tells us of the piston rod being in the way; and the third belongs to a fortunate company who have never lost a ship from the fires being put out, and reasoning therefrom, cannot bring himself to believe they ever will. Perhaps Mr. Gladstone is now of opinion that some security of the character here alluded to is demanded. As for the piston rod preventing slides from being drawn flush with the deck, such an objection is frivolous. The *London* had pumps sufficient to throw out 4,000 gallons per minute. If an aperture had been left open to admit of the head of the rod and crank working through, the engine power would have freed the ship faster than it could have flowed down such an opening. But a box frame over the piston rod would have shut out the water taken in that way. There may be a difference as to the way protection should be given to skylights, but there is no insuperable difficulty in the way. It were better to put out the fires and trust to canvas, where there is plenty of sea room, than to lose a ship and all on board, because the air is excluded on an emergency from the engine room. But there are methods of obtaining artificial drafts of wind by mechanical aid, if the furnaces cannot be kept alight when the skylight is closed. On board the American iron-clad monitors, fans are used for this purpose, and likewise "blowers." Sufficient air can be generated to get an up draft, enough to supply combustion in the furnaces by a light iron rod, with a wheel for carrying a coupling band and a few vanes. In a strong gale of wind, however, a couple of iron pipes, with mouths like a wind-sail, would convey sufficient air down into the engine room to create a current to the fires. Those who have been on board the *Great Eastern* will remember that her engine-room skylight is a space of enormous extent, with nothing but glazed sashes. When this ship was under construction she was to have defied the elements; but this monster can roll, in a beam sea, and there may be occasion for a covering to her skylights. But managers will say, "The seas don't break the skylights of our ships," and therefore, steamers will now and then go down and create a panic. True economy lies in giving security at sea to those who have to travel by ships. A trifling outlay will make all the difference between a safe and an unsafe vessel.—*Mitchell's Steam-Shipping Journal.*

NOTES ON NEW DISCOVERIES AND NEW APPLICATIONS OF SCIENCE.

PEROXIDE OF HYDROGEN.

Peroxide of hydrogen is a compound of hydrogen and oxygen and containing just twice the proportion of the latter element that water contains. As it is a very unstable compound, readily giving off its second equivalent of oxygen, it would be of considerable use in some of the arts, as an oxygenant, if it could be obtained tolerably cheaply. Hitherto it has been produced only by the aid of peroxide of barium, and the process of producing it has been at once costly and exceedingly tedious, When peroxide of barium is added to a dilute solution of hydrochloric acid, kept cool by the vessels containing it being surrounded by a freezing mixture, the barium of the peroxide unites with the chlorine of the hydrochloric acid to form chloride of barium, one of its two equivalents of oxygen combines with the hydrogen of the hydrochloric acid to form water, and the other equivalent of oxygen combines either with the water thus formed or with an equivalent of the water originally present, forming therewith peroxide of hydrogen. To obtain by means of peroxide of barium, however, an at all strong solution of peroxide of hydrogen, after neutralizing with peroxide of barium a dilute solution of hydrochloric acid, the barium must be precipitated from the resulting chloride of barium by means of sulphuric acid, added drop by drop until slightly in excess; the precipitate of sulphate of barium must be separated by filtration, more peroxide of barium must then be added to the filtrate, the barium of the fresh portion of chloride of barium thereupon formed must be precipitated and separated as before, and these successive operations must be repeated very many times—the hydrochloric acid used being finally separated by means of sulphate of silver, and the sulphuric acid by means of caustic baryta. Hofmann has just found that a strong solution of peroxide of hydrogen may be obtained by a much simpler method than this, if peroxide of potassium be used instead of peroxide of barium. This method, indeed, involves only a single operation, consisting simply in adding peroxide of potassium—formed by directing a current of air, by means of a bellows, on to metallic potassium in a state of fusion—to a somewhat concentrated solution of fluosilicic acid. Silicofluoride of potassium, which precipitates, and a strong solution of peroxide of hydrogen, are the results. This process is very simple, but unfortunately, its involving the use of metallic potassium cannot but prevent it from yielding peroxide of hydrogen cheaply enough for use in the arts.

THE SPECIFIC GRAVITY OF ALCOHOL.

A Russian chemist, M. Mendelejeff, has just published the results of a series of very laborious researches with respect to the specific gravety of absolute alcohol, and of the various compounds of alcohol with water. Curiously enough, these results go to show that of all previous determinations of the specific gravity of alcohol and its hydrates, the oldest being those made by Gilpin, in 1794, are the most accurate.

M. Mendelejeff's experiments far transcend in accuracy all previous ones upon the same subject, their author having taken into account every possible source of error, and having bestowed the utmost pains upon ascertaining the magnitude of each. They show that at the zero of the Centigrade scale the specific gravity of absolute alcohol is 0·80625 at 5 deg. 0·8027, at 10 deg. 0·79788, at 15 deg. 0·79367, at 20 deg. 0·78945, at 25 deg. 0·78322, and at 30 deg. 0·78096.

TESTING MINERAL OILS.

The mineral oils used for illuminating purposes are usually tested, either by directly measuring their inflammability or by determining their density. Both these methods are inconvenient, and MM. Salleron and Urbain propose to substitute for them the measurement of the tension of the vapor of the oils—the tension of the vapor of any oil being of course proportional to its volatility, and therefore to its inflammability. In a recent communication to the Academy of Sciences of Paris, these gentlemen describe an apparatus by which the tension of the vapor of a mineral oil may be very readily determined, and they accompany this description with "a table of the elastic forces of one and the same oil taken as a type, so that knowing, on the one hand, the tension of the oil to be tested corresponding to a given temperature, and, on the other, the tension at this temperature of the typical oil, by comparing these numbers the value of the specimens examined can be deduced." This method is simple and convenient, and at the same time much more delicate than the methods previously in use.

FOREIGN INTELLIGENCE.

THE *Spectator* insists that to secure house-room for the working class, their dwellings in great cities must be built into the air. The cost of the site must be distributed among many floors. Inside corridors can be superseded by broad, continuous outside balconies. Each tenant would thus possess a separate house, and the sense of living in a barrack, which workmen so much dislike, would be obviated. Such balcony streets, moreover, would be thoroughfares, and allow of supervision much more easily than corridors, while they would also allow the hard-working poor to open little shops above the ground floor—an impossibility with existing architecture.

TRIPOD MASTS.—A model of Captain Coles' tripod masts has been shown at Lloyd's. It does away with shrouds and stays, as the mast is supported by two smaller ones. The advantages claimed are as follows:—Saving of wear and tear of ropes, improved ventilation of ship, increased speed. Quicker voyages may be made in consequence of a vessel fitted with these masts being able to sail closer to the wind. The masts may be as readily cut away as wooden masts.

CONSIDERABLE difficulty is encountered in procuring suitable timber in South Australia for durable telegraph poles, and it is recommended that the lines which require repairs should be re-poled with Swan River mahogany, as the local timber will not last, on an average, more than six or seven years in the ground. Contracts have been accepted for this purpose, at 17s. 10d. per pole 23 feet long.

THE consumption of oil as a lubricator is immense. There are some railroad companies whose annual expenses are more than $25,000 for lubricators alone. A single manufacturer in England (Young) testified in court to having manufactured and sold over 400,000 gallons of lubricating oil in one year, at about one dollar per gallon. This oil was distilled from coal.

EXPERIMENTS have been made at the Hythe School of Musketry on gun cotton as applied to rifle practice. Excellent diagrams have been made at a range of 1,000 yards, hardly inferior to those obtained with the small-bore rifles of the day. The charge used, was 25 grains, and ten consecutive shots fired at 1,000 yards gave a mean radial deviation of 1·65 feet.

THE *Journal Du Havre* states that during the violent hurricane of the 11th, 200 enormous blocks of stone, placed in front of the breakwater at Cherbourg to protect it from the action of the sea, were lifted by the waves and thrown over the wall into the harbor. Forty cannon planted on the pier were thrown into the sea. Such a storm had never before been experienced in that place.

THE following is a good method of bronzing tin castings:—When clean wash them with a mixture of one part each of sulphate of copper and sulphate of iron in twenty parts of water; dry and wash again with distilled vinegar eleven parts. When dry polish with colcothar.

IRON CHURCH AT CREWE.—The directors of the London and North-Western Railway Company have just completed the erection of an iron church, to accommodate 300 persons.

CHLORATE of potash is now extensively used in dyeing as an oxidizing agent, in brightening what are technically termed "steam colors."

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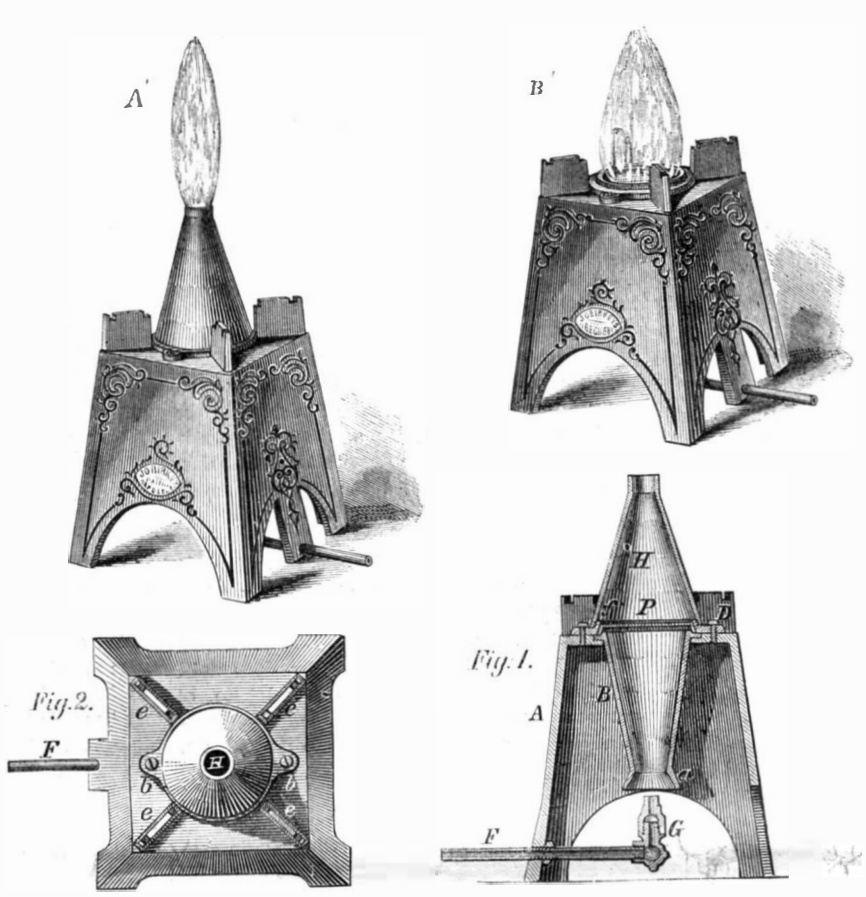
Improved Gas Heater.

The universal application of gas, in cities, for domestic and manufacturing purposes, has called forth a number of inventions for improving and perfecting the apparatus in which it is burned, and we here present an engraving of a new one which is said to be very satisfactory in its operation. The peculiarities of the heater consist in its simplicity, economy, durability, intensity of heat, and power of producing two distinct flames—either concentrated or diffused. It is convenient in size, simple in its construction, and it is always ready for use; and formed in such a manner that it does not smoke. It gives a great amount of heat, consuming at the utmost but six feet per hour, thereby making it most economical and desirable. Having two distinct flames—either to be used at pleasure—gives it a superiority. For common purposes, as the culinary department, the diffused flame will produce all that may be desired; but when a powerful, direct heat is wanted, as for many manufacturing concerns, the object is gained in a few seconds. In the engraving A is a cast iron casing, square and tapering from the base upward. In the top of this casing is let the upper flanged edge of a tube, B, which is in the form of a truncated cone inverted, and which terminates at the lower end, in the flaring mouth, *a*. This tube, B, is confined to its place by an annular plate, D, through lugs in which pass set screws, *b*, into the casing, A, and this annular plate, D, contains a diaphragm, P, of wire gauze, or perforated metal. F is an ordinary gas pipe, passing through and secured to the casing, A, and terminates in an ordinary tip, G, which is central with, but situated below the flaring mouth, *a*, of the tube, B. On the top of the casing, A, are four projections, *e*, on which rest objects to be heated, and on the plate, D, is an annular projection, *f*, on which rests the cone-shaped tube, H, which can be removed and replaced at pleasure.



These are the details, and the operation of them is apparent to all.

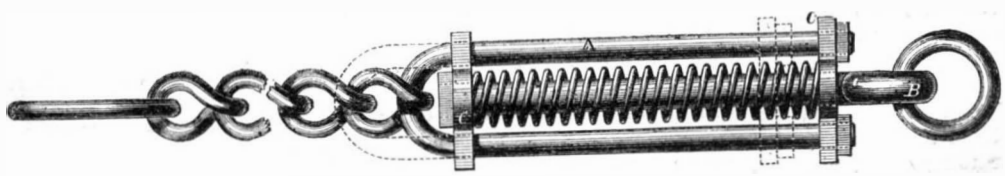
This apparatus will answer admirably for small steam boilers. There are many who use such things, both for pleasure and for business, and it is much more convenient than kerosene oil, which is sometimes employed.

For further information address the inventor, John Q. Birkey, at No. 245 South Sixth street, Philadelphia, Pa., by whom it was patented Oct. 31, 1865.

Improved Jar Arrester.

Every one who has ridden over city pavements must have noticed the frequent shocks and blows horses are subjected to from the wheels falling into ruts, thereby bringing the pole around with great violence. Many animals have been badly injured from this cause, and omnibus horses are not unfrequently so injured as to be laid up a long time.

The engraving published herewith represents a new invention designed to mitigate the evil, and so relieve the jerk that its effect will be lost. The mildest-mannered beast in the world soon becomes cross and fretful when twitched about as described. The instrument consists of a spring confined between a bent bar, A, attached to a ring bolt, B. The latter is fastened to the collar and the chain is connected with the pole, so that any sudden strain on it is immediately taken up on the spring and not felt by the horse except in a limited degree. Testimonials from persons who have used this invention agree in considering it a useful one. The inventor will sell the entire patent or will allow it to be manufactured at a royalty. To those desiring an interest in this invention rights will be sold at a moderate price and on liberal terms. It affords a splendid chance to those wishing to make some money with small capital. The article is easily made, requiring scarcely any machinery to start the business, sells readily, and pays a fair profit, and requires no trial, which most other inventions do, besides it is portable.



M'NAMEE'S JAR ARRESTER.

BIRKEY'S GAS HEATER.

For further information address J. McNamee, of Easton, Pa., by whom it was patented through the Scientific American Patent Agency on July 14, 1863.

RECENT IMPROVEMENTS IN MARINE ENGINEERING.

This subject, a most important one, doubtless, to our readers, and especially to those more directly connected with marine engineering and steam navigation, has been handled in a very creditable manner by Mr. Charles Smith, a short time since, in the paper following his opening address as President of the Association of Assistant Engineers in Glasgow. He states that, though he has adopted the title given, it must not therefore be supposed he is also to use the trite phrase, and say that he is almost overwhelmed with the great advances that have been made in marine engineering within the last ten years, for really, although the efforts towards improvement have been innumerable, and acting in almost every available direction, yet unfortunately, the success that has attended these efforts has been very limited indeed. Whatever may be the cause of this, it is certainly not that there is no room for improvement, for that, in this respect, there is still a vast field for the marine engineer is known to the merest tyro. We find these efforts toward improvement displayed in the almost endless variety of the marine engine. We have in paddle engines, the side-lever engine (now, however, fast falling into disuse), the oscillating, the diagonal direct-acting engine, the trunk, and the steeple engine. For screw engines we have the inverted-cylinder engine, the direct-acting horizontal, the horizontal return connecting-rod engine, the trunk engine, and, lastly, the geared engine, which last, in fact, any of the screw engines enumerated may be, but which is a kind of engine that is also fast falling into disuse, although, like the side-lever paddle engine, it has its own peculiar advantages which its advocates will be loth to sacrifice. The internal arrangement of gearing in many ways may be considered the best form of this kind of engine. The engines which have been enumerated, for paddle and screw ships, are the best known as being the most extensively used, but are far from including the whole of the varieties. And, even in its best form, the marine engine is a most wasteful machine, when we consider that 9-10ths of the heat developed in a furnace (or which ought to be developed) is absolutely lost to us, and only the remaining fraction utilized, and an equivalent in power obtained from it. That this statement is correct the valuable researches of Joule in thermodynamics go far to prove. It may be that we are on the wrong track altogether, and instead of endeavoring to obtain the equivalent of heat in power through the medium of water, that we should be rather obtaining that power by more direct operation on the heat itself. Be that as it may, it certainly will not be very surprising if, in the next century, our modern steam engine be considered a more antiquated and wasteful machine than we have ever regarded the Savery or Newcomen engines. But to commence with the boilers of marine engines, of which in a paper such as this there is really little to say further than that there has been little or no improvement of a permanent character that has been successfully applied to any of the various kinds of them. We find, however, that the tubular boiler being now so generally adopted, we may consider it to be the boiler best suited for marine purposes The grand principle to be attended to in all boilers is one too often neglected, viz: that the boiler be of such an internal arrangement as will best promote the most rapid circulation of the water, by which not only is the value of the heating service much increased, but the boiler plates are rendered less liable to be over heated. Perhaps there have been more attempted improvements on boilers, however, in the way of smoke-consuming than in any other way; but we may call the result of all attempts failures so far, seeing it has been found that the admission of cold air for the purpose of burning the smoke has, in an economical point of view at least, proved injurious rather than beneficial, and it has been in this direction that most smoke-burning apparatuses have tended. And all that can yet be said of smoke burning is that it can be best effected on a well constructed fire grate, by careful firing, with plenty of space between the bars for the admission of air. The result of a deficiency in the latter respect is the formation of carbonic oxide, which is often seen in flame at the mouth of the funnel, where it catches fire on meeting with the oxygen of the air in its exit.

The author states, the most perfect smoke-consuming furnace he had yet seen was that according to Wilson's patent, a furnace with which he had something to do in adapting it to steam boilers. It may, with some modification, be yet adopted for marine purposes, with great economy only, however, for those working with low pressures. Besides being a smoke consumer, it likewise possesses the double advan-

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tages of being a self-feeder, requiring little or no attention from the fireman, and the ashes only requiring to be removed every two or three days. These are advantages that would be of greatly-increased value at sea. This furnace however, requires to be considerably modified and improved before it can be confidently applied to marine boilers.

It seems all the advantages to be gained from superheating may be obtained by simply drying the steam so much as to convert all the watery particles and the bubbles held in suspension into dry steam. And in order to accomplish this the complicated arrangement of pipes and winding flues in the uptakes may be considered altogether unnecessary, for not only are they expensive in first cost, and difficulties in after repair, but their presence in the uptakes often acts injuriously in vitiating the draft. The author proceeded to say that the best and simplest form of superheater for marine boilers he was acquainted with consists simply of steam drums encircling the uptakes, these drums being united to each other as well as to the steam space of the boiler by copper pipes, the steam pipe to the engines being taken from the highest point of one of the superheating drums.

The author then introduced the subject of high-pressure steam worked expansively, and stated that the economy resulting from the use of high-pressure steam, setting aside expansion altogether, is measured by the fact of about half a tun of coals being saved in twenty-four hours per 100 horse-power actual, by using 100 lbs. steam instead of 40 lbs; and, of course, when steam of high pressure is judiciously economised by expansion, the advantages accruing from its use are greatly multiplied.

Take, for example, a cylinder into which steam is admitted of 48 lbs. pressure during a quarter of its stroke, it will be found (seeing that as the volume increases the pressure decreases) that the mean pressure behind the piston at half, three-quarters, and end of stroke are 24 lbs., 16 lbs., and 12 lbs., respectively, thus giving a mean pressure over the whole of 25 lbs. per square inch, which represents a pressure of 52 per cent of the initial pressure, but seeing that the quantity of steam used was only 25 per cent of the whole stroke, the gain resulting from this amount of expansion, viz., 48 lbs. steam, cut off at a quarter, is therefore 27 per cent.

The arrangement of valve gear now mostly adopted, in preference to the foregoing arrangement, is some modification of Stephenson's original and elegant link motion, which, besides being well adapted for reversing the engines, may also be, with tolerable efficiency, empolyed as a means for obtaining with great ease a variable amount of expansion within certain limits. It is limited, however, in this respect by the injurious amount of cushioning that takes place on the eduction side of the piston when the engine is being wrought at a high rate of expansion, an amount which at certain grades would annul the benefit that would be otherwise attained.—*London Artizan.*

A Steeple Jack at Westminster.

A daring individual named Burns, from Manchester, has succeded at the House of Parliament in the dangerous operation of fixing the copper bands round two of the finials on the center tower. The last November gale blew off one of the finials, and loosened another; and if it had not been for the lightning conductor, one would have dropped down, and might have done considerable damage, being one of the the highest, and 9 inches square by 6 feet 5 inches from its basement to top, surmounted by a vane that would not revolve. From that cause the wind had such power over it that the third joint gave way, and the finial fell against the steeple; the west wind, however, moved it again, and placed in its position where it rocked. Burns made his way, 210 feet high, outside the tower, without scaffold, by a series of seven ladders, in an ingenious manner, and safely repaired it. Burns very recently got up to the top of the steeple of St. Mary's Church, Rotherhithe; succeeded in taking down the weather-vane, which is 7 feet four inches long, and 84 pounds weight, and after it had been repaired and regilded restored it to its place.—*Builder.*

THE gyroscope was invented by M. Foucault, and first attracted attention from its power of rendering the rotation of the earth visible.

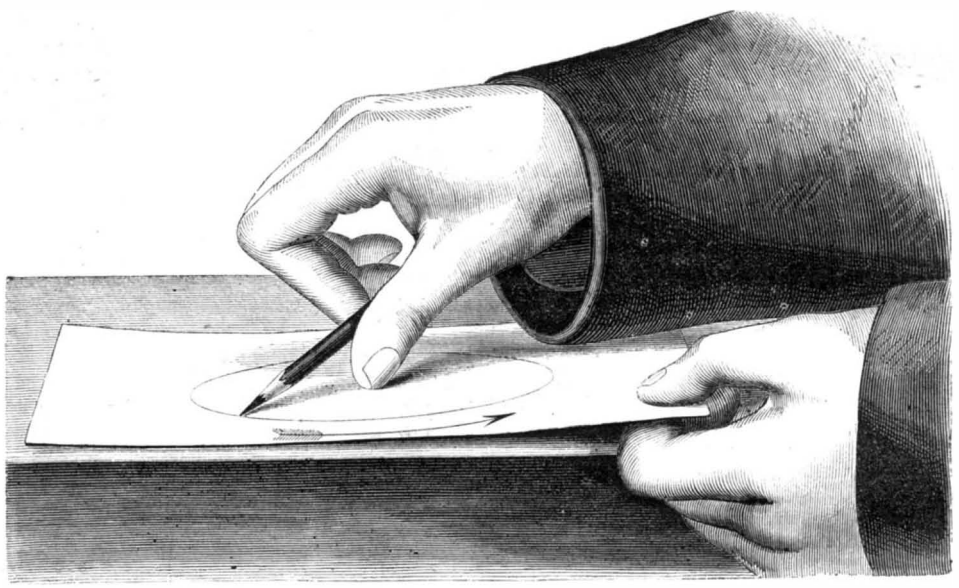
Correspondence

To Strike a Circle with a Pencil.

MESSRS. EDITORS:—

"Some, like the spider, circles can design,
Sure as De Moivre, without rule or line,"

while a more numerous class find their best efforts present the profile of a corpulent doughnut or a peach-bloom potato. Let such grasp the pencil, about in the same way that a Celestial does his writing brush, between the thumb and fore-finger, and resting the thumb and point of the pencil upon the paper, as in



the accompanying sketch, rotate the sheet around the thumb as a center and the work is done. For larger or smaller circles lengthen or shorten the grasp.

G. H. KNIGHT.

Cincinnati, Ohio, Feb. 1, 1866.

Rusty Iron.

MESSRS. EDITORS:—Please inform a new subscriber to your journal what is best to take rust of long standing off steel-faced tools, such as augers, chisels, hatchets, hammers, etc. Have tried emery powder and paper, in connection with sweet and lard oil, and pumice stone, without success. Perhaps some of you can throw light on this subject.

WM. D. NEESE.

Parkersburgh, West Va., Feb. 9, 1866.

[There is no way to remove rust from metal but by getting below it, or renewing the surface. Where it is not deep seated, emery paper will do, but if long standing the goods must be refinished.—EDS.

Cold Cast Iron on Melted Cast Iron.

MESSRS. EDITORS:—I have been a careful reader of your valuable paper for a number of years, and have added largely to my stock of knowledge by so doing. The articles published by you on the foot lathe were particularly interesting to me, and I have since purchased a small lathe where I can work when I feel like it. In a late issue I see the cold and molten iron question again. I am a pattern maker for a machine shop, with foundery attached, and have a good chance to try the experiment, and I did yesterday afternoon. I found the cold floated in every case. I took the molder's skimmer and pushed the cold to the bottom of the ladle five or six times, and, as soon as released, it came to the surface, nearly as buoyant as a block of wood in a pail of water. It will float, but why I cannot tell, but expect to see it explained in your paper before long.

D. D. BRIGGS.

New Bedford, Mass., Feb. 25, 1866.

Hints to Molders.

MESSRS. EDITORS:—In reply to "S. V. E., of Illinois," who inquires how to mix facing sand, I would say there is much in the manner the mold is treated by the molder. If it is of such a nature that the trowel and other smoothing tools can be employed, they ought to be used freely before dust is put on the mold, and again after it is put on. Cannel coal is the best to mix with sand for facing—about one to five for heavy, and less for light castings. Metal very hot will not make so smooth a casting as dull metal will, but hot metal makes a solid and strong casting, and will finish up better. If these few hints will be of any use to S. V. E., he is heartily welcome to them. From a fifty year old MOLDER.

Indianapolis, February, 1866.

Shellac Solvent.

MESSRS. EDITORS:—One of your correspondents desires a solvent for gum shellac; perhaps the following will give him better satisfaction than the solution of borax. Heat 1½ lbs. of shellac in one gallon rain water until the gum is soft and stringy then add 1 lb. saleratus, which will cut the gum and render the compound clear. This is used by some furniture dealers under the name of "light varnish."

JEAN JOHN.

Rockford, Ill., Feb. 5, 1866.

A Believer in Witch Hazel.

MESSRS. EDITORS:—In reply to C. B. S., of Connecticut, in your paper of the 3d inst. you say the belief that water may be found by means of witch hazel "is one of the delusions of ignorance."

I am not a little surprised to find such an opinion in your paper.

There are persons so qualified—either electrically, magnetically or otherwise—that are now employed with astonishing success in the oil regions. Their way of operating is to select a well-grown hazel limb, with forked branches, with the forks held firmly in each hand, and with the larger end of the stick bored, filled with native earth oil, and plugged, elevated in air, they walk over the district assigned them. In the locality which I am now speaking of, there is a slatish strata, at a uniform depth 50 to 70 feet, and wells to be successful require to tap the open veins which run in right angles. Once through this, oil is reached and pumped in greater or less quantities.

It is found by extended experience that oil attracts oil, as water does water, when used as I mention, in the witch hazel, when in the hands of properly-constituted operators. The operator when he passes over a vein, finds at once an influence at work to depress the hazel rod, and firmly as he may hold the forks upright, the end with oil bends down to the earth in several vibrations, and then resumes its upright position—having evidently expended the electrical or other force in the vibrations. Now this account is a fact, and one which can be verified to satisfy the most incredulous. In view of that fact, I must say, your opinion that it is based on the "delusion of ignorance" is remarkable, and shows a deplorable condition of enlightenment in the writer. If location and names of operators will aid in dispelling your ignorance they shall be forthcoming

C. M. S.

New York City, Feb. 14, 1866.

[The chirography of this letter was very good, and the spelling correct, showing—notwithstanding the use of the plural *strata* for the singular *stratum*—considerable education on the part of the writer. We publish it on account of the description which it con-

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tains of using witch hazel. We believe that the hazel is usually held with the branches bent outward, so that the projecting trunk is subjected to a strain, and the slightest turn of the hands will cause it to bend downward. When it does bend downward, the movement doubtless results from a turn of the hand sometimes perhaps involuntary.

The reason why this foolish superstition has retained its hold on the community so long, after many other superstitions have been swept away, is the general success in finding water where the hazel indicates; but the success would be just as general if the wells should be dug where the hazel does not bend. In most districts water is found wherever a well is sunk. We advise any of our readers who may have a lingering inclination to this superstition, to try the experiment of digging their wells just where it is most convenient to have them, and, at all events, never to pay any good money to a witch-hazel charlatan.—Eds.

Regulating the Electric Light.

Messrs. Editors:—I notice in a late number of the Scientific American, that M. Faucault has succeeded in making the "points" of the electric light self-adjustable—not an extremely difficult achievement. But has he eliminated the main difficulty, viz.: the transfer of material from one point to the other, thereby destroying their shape and injuring their conductibility?

Rotating disks of proper material and with planes of rotation at differing angles, with sharpened edges, and of necessary distance regulated by strength of current, will entirely overcome the difficulties inherent in the system of "points."

It is many years since I tried the experiment, succeeding admirably, and I belive the invention to be a valuable one; but I have neither time nor means to devote to its elaboration or introduction, and therefore shall be glad to have the public benefitted by the suggestion. W. T. Guernsey.

Norwich, N. Y., Feb. 16, 1866.

The Flickering of Hot Air.

Messrs. Editors:—I may be asking a question that to you may seem very simple, but nevertheless it is one that I have never seen explained. It is this: "Why is it that we can see heated and cannot perceive cold air?"

Some persons may undertake to answer it by saying that it is moisture rising from the object to which the heat is applied. This, I presume, is an erroneous impression, from the fact that if a sheet of polished tin be placed in an oven and thoroughly dried, and afterward exposed to the rays of the sun on a hot summer's day, the same phenomena will be seen. The heated air seems to arise more after the manner of flame than any thing else to which I can compare it. It does not seem to be so easily affected by the wind as moisture or steam.

I should like to see the subject fully discussed in your valuable journal, to see it proved to be either moisture or visible caloric. I am in favor of the latter opinion, and that it becomes visible, much in the same way that steam does when admitted in the open air. C. J. S.

Norfolk, Va., Feb. 19, 1866.

[Refraction is usually assigned as the explanation of this phenomenon. When light passes at an inclined angle from one medium to another of different density, it is bent or refracted at the surface of the two media. As heated and expanded air rises from a warm body, it encounters air cooler and of greater density, and light in passing through strata of different densities is refracted at the dividing surfaces between the strata.—Eds.

The Avery Engine.

Messrs. Editors:—You will much oblige by answering a few questions, which will be of much interest to a reader of the Scientific American.

What is the rule for calculating the power of the Avery engine?

How much opening must there be to the arms, one foot long, or forming a circle of two feet, to move a 10 horse-power engine, on the Avery principle—the steam 30 pounds to the inch? How many revolutions would the wheel or arms make per minute?

Would compressed air work as well as steam, being 30 pounds per inch?

Would it be an improvement on this engine to have a drum 22 inches in diameter, with hollow screws on the verge of the drum, the heads one inch from the drum, and holes made inside of the screw head for the exit of the steam?

Would there be less friction in the air, with the drums while running, than in the arms sword-shaped, as in the Avery engine?

Can there be as much power obtained from this engine as there is in the oscillating or other engines?

J. H. Thomas.

Lacon, Ill., Jan. 27, 1866.

[No power from the expansion of steam is obtained in the Avery engine, but the full power of working steam, without expansion, should be obtained, provided the velocity of the arm at the point of exit is equal to the velocity with which the steam issues. To realize this condition it is necessary to have long arms; those of the engine in Attorney street were 2½ feet from the center. That engine was run, we believe, about 3,000 turns per minute. Compressed air would work as well as steam. The drum plan was patented by Avery, but he preferred the sword-shaped arms.—Eds.

African Iron Workers.

Messrs. Editors:—I send you a sort of javelin from the country behind Cape Palmas, west coast of Africa. It is from a native chief, or "king," as they are called, and is made by the natives from iron found as you see this, malleable, and ready for use.

It is the iron, principally, that I send it to you for, being, so far as I know, one of the very few specimens of pure iron ever found, that is, sufficiently pure to work up without purifying. The weapon, itself, is one in use among the interior tribes, and came to me in one of my vessels then trading there, some years since, and is one which the moths and rust have attacked. There is said to be a mountain, in the rear of Cape Palmas, of this iron.

R. H. Atwell.

Baltimore, Jan. 24, 1866.

[We are much obliged to our correspondent for sending us this specimen of African art. It is a javelin about six feet in length, armed at both ends with iron, the blade at one end having a rib on the side, almost exactly like our infantry bayonets. The iron is not found native in Africa in malleable form, but is reduced from an oxide by charcoal; the reduction is made, however, directly from the ore, without carrying the metal through the state of cast iron. Speke describes and illustrates the process in his work on Africa.—Eds.

Filling A Vacuum.

Messrs. Editors:—Supposing a vacuum chamber be placed on the deck of a vessel about midships, and a pipe be run from the same, on an incline, to the bottom, near the steam. Now, if the boat be running ten miles per hour, and a cock is opened in the pipe, will the chamber be filled with water?

Chicago, Ill., Feb. 17, 1866.

["Near the steam" is indefinite as no steam is mentioned. It may be intended for either "stem" or "stern," but in any case it makes no difference, the chamber would be filled whether the pipe was straight or inclined, or whether the boat ran ten or twenty miles an hour. "Nature abhors a vacuum."

Torpedoes and Schoolboys.

Messrs. Editors:—Will you be kind enough to inform me the materials used, and quantities of each, in making torpedoes, those used by children as fireworks, and receive the thanks of a—

Schoolboy.

Fall River, Mass., Feb. 19, 1866.

No, sir, we will not. Many boys have been injured for life by fussing with gunpowder and explosive substances, while none ever learned anything by it. We think there are other fields of knowledge more profitable to explore.—Eds.

Stone is now sawn in France with great rapidity and economy by means of a perforated disk of iron on which a coating of lead has been cast, the perforations serving to connect and bind the plates of lead thus formed on the two sides of the disk. The lead is kept well covered with emery, which falls on it from a reservoir above.

Notes and Queries

J. A. B.—John Ericsson, of N. Y., was one of the first to plan the steam fire engine in this country. In 1840 he took the prize—a gold medal—offered by the Mechanics' Institute for the best plan for a steam fire engine. It was a very light and excellent machine. It had a bellows attached, to quicken the fire. We believe that the first steam fire engine actually put in operation in this country was that constructed by Mr. Hodges in 1841, in this city, for the insurance companies. The excessive prejudice of the firemen against the use of steam, and the too great weight of this first machine, caused a suspension of further constructions. Mr. A. B. Latta, of Cincinnatti, appears to be the next constructor, and although his first engines were very heavy and hard to move, he persevered in their improvement and introduction. Other enterprising projectors took hold of the subject, and now almost every city and town of note in the Northern States is provided with steam apparatus. Philadelphia introduced them in 1853, and now has a splendid array of steam fire engines. The earliest machine was constructed by Brathwaite, of London, Eng., in 1830. It had an upright boiler, and worked well; total weight 5,000 pounds. It would be difficult to say whose make is the best where all are so good. The machine which you have is one of the best.

M. P., of Ohio.—In speaking of a large and small pulley you evidently refer to tackle blocks. Among mechanics pulley is a generic term, applied equally to a belt wheel or a block and fall. The paragraph in Silliman's Philosophy you refer to is familiar to us, but theory and practice are not always reconcilable, and this is a case. Can you raise as heavy a weight from the ground with a line over a two-inch pulley as with one ten inches?

C. E. A., of Vt.—You cannot raise water more than 32 feet in theory, and it is a good pump that will lift it 20 feet. The pump does not draw the water, but removes the air from the pipe; the atmospheric pressure outside forces the water up in it. As this pressure is only able to support a column 32 feet high, it follows that the water cannot be raised so far. Why do you not place your boiler near the river, if possible, and run a steam pipe fifty feet to the engine. If the pipe is set in a box and covered with wood ashes to the depth of four or five inches you will have little or no loss from condensation, and none from pressure.

T. F. W., of N. H.—Masts built up of separate pieces are said to be stronger than single sticks. A timber built up of sound plank and bolted at intervals, with holes suited to the size of the stick, would probably be stronger than a solid one. One reason is that a built-up stick is of equal density throughout, while a natural one is weakest in the center.

H. C. A., of Ohio.—It is a well-known law that fluids press equally in all directions. Steam is an aeriform fluid, and exerts as much pressure at the bottom of a boiler as at the top. You commit the error in your calculation of assuming the surface of the water to be a solid platen, whereas the steam passes or presses through it. Do you mean to say that in a boiler 14x50 inches there is only 2·54 pressure at the bottom, with steam at 10 pounds?

J. B. B.—Your engine of 7½-inch cylinder, 18-inch stroke, gives 20 nominal horse-power at 100 revolutions, and 60 pounds of steam following full stroke. The same work could be done by a condensing engine of 25-inch cylinder, 36-inch stroke, traveling 150 feet, or 25 revolutions per minute, cutting off at 3 inches, at 60 pounds initial pressure.

T., of D. C.—A horse can draw as much, theoretically, thirty feet from the load as close to it. A correspondent who tried the experiment found no difference in moving the load at different distances.

S. R. T., of Pa.—By drawing your strips of brown paper through between your arm and body you charge the same with electricity; this will explain all the phenomena which you describe. Copper retorts in which chlorate of potassa and oxide of manganese have been heated can be cleansed with hot water or with a weak solution of oxalic acid.

W. E. S., of Mass.—There is a magnet at the Free Academy of this city which has supported seven men at one time. It is formed of two round bars of iron, each 4 inches in diameter and 24 inches in length. This is an electro-magnet, and retains its power only so long as the current is running around it. Steel and cast-iron magnets are generally enfeebled by time.

R. H., of N. Y.—Friction, in the case of a belt on a pulley, is not abrasion, or an abrading contact, but simply the adhesion of two surfaces. You must consult your back numbers to find the pitch of your pinion. There are many rules given there, but we cannot print them over every week.

C. N. B., of Pa.—We can supply you with any work on architecture that you may wish to obtain.

G. L. W., of N. H.—Box your tanks in and fill with fine ashes, which will prevent them from freezing.

Will S. C. Smith inform us to what Post-office we shall address him?

S. S. B., of Iowa.—The substance you send is red chalk.

M. O. H., of Pa.—The finish on watch movements is of two kinds, bright and dead. The bright is given by wheels charged with rotten stone and oil, crocus, martis, and similar substances. The dead finish is done by a scratch brush; that is a round brush driven by a lathe, and having short teeth of brass wire. The work is held against the ends of these teeth, which impart the peculiar appearance spoken of.

H. C. B., of N. Y.—You can carry steam a thousand feet with little loss from condensation, provided the pipe is well protected against radiation by wood ashes.

A correspondent wishes to know the quickest and easiest method of granulating zinc (spelter) so as to use it for brazing with.

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NEW INVENTIONS.

Machine for Cutting Files.—This invention relates to a machine for cutting files, and it consists, first, in an improved feed mechanism for feeding the file to the cutter, whereby the speed of the file may be varied according to the size of tooth required. The invention consists, second, in an improved file bed so constructed and arranged that files of different shapes may be attached thereto. The invention consists, third, in an improved means for adjusting the cutter to suit the shape or form of the file in its longitudinal profile. The invention consists, fourth, in a means for graduating the strength of the spring according to the strength of blow required to be given the cutter. The invention consists, fifth, in a novel and improved arrangement of the cutter stock, whereby the cutter may, with the greatest facility, be adjusted to give the file blank the different cuts required. The invention consists, sixth, in an adjustable double spring, whereby the hammer may be operated upon with greater or less force, as circumstances may require. The invention consists, seventh, in a means for holding or securing the file in its bed, whereby the file may be firmly held in position, and very readily attached to and detached from the bed. This invention, it is believed, obviates the difficulties hitherto attending the cutting of files by machinery. An uniform depth of cut is obtained, due provision made for any inequalities or variations in the thickness of the file blanks—and the parts may be readily adjusted to admit of different shaped files being cut—while the work is performed very rapidly. The cutter may also, with the greatest facility, be adjusted to cut at the different angles required, and the hammer subjected to blows varying in force as the nature of the work may require. The feed motion is extremely simple, and capable of being varied with the greatest nicety to suit the character of the file to be cut, and affords superior advantages for disconnecting the slide or carriage from the screw, so that the former may be shoved back at the termination of each cut of the blank. E. Bucklin, Jr., is the inventor. For further particulars, address the assignee, Lysander Flagg, Pawtucket, R. I.

Head Block for Saw Mills.—This invention relates to certain new and useful improvements in head blocks for saw mils, and consists, first, in the employment or use of supplemental posts or knees connected with wings or arms attached to the slides of the head block, and all so arranged that the log, cant, or timber, to be sawed, will have a perfect bearing along its whole length at the side opposite to that where the saw cuts, and will consequently be prevented from springing under the action of the saw, or under the gripe or pull of the dogs—a contingency of frequent occurrence with ordinary head blocks when the log, cant, or timber, being sawed, is reduced or sawed to a thin piece so as to be easily bent, sprung or deflected out of line with the blade of the saw, and which causes a considerable waste of timber or lumber, and great annoyance to the sawyer. The invention consists, second, in the employment or use, in combination with a dog of peculiar construction, of a handle connected with the dog, or formed or forged out with it in such a manner that the log, cant, or timber, may be expeditiously dogged and undogged, and without the possibility of the ends or points of the dogs, which penetrate the log, cant, or timber, coming within the line of the saw kerf—the saw being thereby prevented from being injured by coming in contact with the dogs—and the sawyer enabled to secure the log, cant, or timber, on the head block, and detach it therefrom very expeditiously, and with the greatest facility. The invention consists, third, in the employment of notched bars attached to the sides of the head block, and used in connection with stops applied to the heads, and arranged in such relation with the racks at the under sides of the slides, with which racks the feeding pawls engage, that the log, cant, or timber to be sawed may be adjusted in such a position on the head block as to ensure the log, cant, or timber being sawed into the greatest possible number of merchantable boards of a given or equal thickness—a result due to the waste, if any, being taken off with the slab. The invention consists, fourth, in the employment or use of a gage, arranged in a novel way, by which the accurate setting movement of the saw to the log, cant or timber, is insured, both as regards the sawing of the latter wholly into boards or planks of an equal or an uniform thickness, and also partially into boards or planks of an equal or uniform thickness, leaving a piece of timber of given dimensions. E. H. Stearns, of Erie, Pa., is the inventor.

Microscope.—This invention consists in the use of a movable reflector inserted into the tube of a microscope, and arranged so as to transmit the light down through the lens on the object in such a manner that, by the action of said lens or object glass of the microscope, the light is condensed on the object to be viewed, and an object viewed as opake will be illuminated for the microscope. It consists, further, in the application of an adjustible disk with two or more holes of different sizes in combination with the aperture in the side or front of the reflector case, through which light is admitted on the reflector in such a manner that by turning said adjustable disk the quantity of light admitted to the instrument can be regulated to suit the object to be viewed. It consists, finally, in combining with the reflector a slide which moves in suitable ways in the reflector case in such a manner that a double motion can be given to the reflector, viz., a revolving and transversely sliding motion, and, furthermore, the reflector can be readily removed and replaced by another whenever it may be desirable. Hamilton Smith, of Gambier, Ohio, is the inventor.

Permutation Lock.—This invention relates to a lock the key of which is composed of a series of notched plates or disks secured to a common handle, and operating in combination with a stationary lip and with a series of tumblers, notched wheels, rising and falling slide, and knife, attached to an oscillating lever in such a manner that by the combination of said notched disks a key is obtained which admits a very large number of changes, and which, when removed from the lock, leaves no hole through which powder can be introduced. When the door is locked, and the notched wheels turned to such a position that their notches do not register, and consequently they cannot be brought, by turning them simultaneously, in such a position in which the knife will pass into the notches, it is next to impossible to pick the lock or to open it except with the proper key. The oscillating lever, to which the knife is attached, forms a latch which rests upon an arm hinged to the bolt. If an attempt is made to force the bolt back before the notched wheels are brought to the proper position to admit the knife, said latch rises and catches behind a shoulder on the bolt, thereby relieving said notched wheels from all pressure and preventing the possibility of feeling for the notches; said notched wheels are secured to a rising and falling slide, to which motion is imparted by a dog, which is acted upon by the shank of the bolt. Joseph Loch and George Bayer, of No. 191 Third street, New York City, are the inventors.

Sewing Machine.—This improvement in sewing machines consists of several particulars, one of which relates to effecting tension on the needle thread; another relates to the take up; another relates to means for communicating motion to the shuttle shaft; another relates to the construction of the face plate which holds the needle bar; another relates to the cam groove on the needle bar, by means of which it receives motion; another relates to the shuttle; another relates to the manner of securing the needle. This invention is of the sort known as a shuttle machine, but its several features, with the exception of the shuttle and the means for driving it, can be applied to machines of other kinds. John Hanlon, Newark, N. J., is the inventor.

Bending Wood.—The object of this invention is to bend wood without steaming it. This is accomplished by means, first, of a frame, whose form is to be that which is to be given to the wood to be bent; second, by means of hot metallic plates laid on either side of the wood to be bent; third, by applying force to the wood in such directions as to thrust it down into a concave bed instead of drawing it, as heretofore, about a convex form, and, fourth, confining the ends of the wood within the metallic plates, so that the tendency to break during the operation of bending is resisted. The invention is applicable to all branches of manufacture in which wood is required in curved forms, and it saves the labor and expense of the present system of building up curves by means of separate blocks. It is designed, also, for forming the cases of pianos, whether grand, cycloidal or other styles; the whole of the case being bent into shape in a single operation, no matter how irregular its shape may be. The "block" of such instruments is also bent in the same way. The invention is of great value in this branch, because pianos are thereby made of much greater strength, and also at less cost than heretofore. Edward C. Harris, of No. 150 West Forty-eighth street, New York City, is the inventor.

NEW PUBLICATIONS.

IRON, COAL AND COPPER.—"*The Merchants and Bankers' Almanac* for 1866," one volume octavo, published at the *Bankers' Magazine* office, New York, contains lists of 1,620 National Banks, (with the names of President and Cashier and New York Correspondent of each), 400 State Banks; 1,100 Private Bankers in the United States; Banks and Bankers in London, Liverpool, Dublin, Edinburg, Leeds, Manchester, Birmingham, Etc.; 600 Bankers in Europe, Asia, Africa, Australia, the West Indies, South America, New Zealand, Mexico, Canada, Etc.; Alphabetical list of 2,000 Cashiers in the United States; list of 300 Savings Banks in New England and New York, with the deposits of each; Bank Statistics of the United States; list of Standard Works for Bankers; PRICES OF IRON, COPPER, COAL, MONTHLY, AT NEW YORK, 40 YEARS; daily price of Gold for four years, 1862-1865; and six engravings, viz.: 1. The New York Stock Exchange (erected 1865); 2. The Paris Stock Exchange, (1808-1826); 3. The Bank of England; 4. Banking Houses, Wall Street; 5. New Insurance Buildings, Broadway, New York; 6. The Mutual Life Insurance Company of New York. Price two dollars.

Another Patent Swindler.

Mr. Ebenezer Ames, of Webster, Mass., writes us that a scoundrel is traveling around the country, selling rights in a Corn Sheller, which he represents to have been patented. The swindler sells the right, and a certain quantity of castings for a specific sum, takes the cash and agrees to send the castings by express on a fixed day. He then departs and the victim who has been robbed hears from him no more. Referring to the SCIENTIFIC AMERICAN, in which all patents are officially reported, it will be seen that no such patent, under the date mentioned, has been granted. By a simple reference to our paper the public can at at all times detect real patents from bogus.

MARKETS FOR THE MONTH.

	Price Feb. 27.	Price Jan. 31.
Coal (Anth.) ₩ 2,000 lb.	$11 50 @12 00	$12 00 @13 00
Coffee (Java) ₩ lb.	27½@ 28½	27½@ 28½
Copper (Am. Ingot) ₩ lb.	35½@ 36½	37 @ 38½
Cotton (middling) ₩ lb.	44½@ 46	50 @ 51
Flour (State) ₩ bbl.	$6 60 @ 8 40	6 85 @ 8 50
Wheat ₩ bush.	2 20 @ 2 80	2 25 @ 2 80
Hay ₩ 100 lb.	80 @ 85	85
Hemp (Am. drs'd) ₩ tun.	325 00@335 00	320 00@330 00
Hides (city slaughter) ₩ lb.	12½@ 13	12½@ 13
India-rubber ₩ lb.	75 @ 1 00	70 @ 95
Iron (American pig)	48 00 @50 00	50 00 @51 00
Iron (English and American refined bar)	100 00@110 00	125 00@130 00
Lead (Am.) ₩ 100 lb.	9 00 @ 9 12½	9 40 @ 9 60
Nails ₩ 100 lb.	7 50	7 50
Petroleum (crude) ₩ gal.	27½@ 28½	32 @ 32½
Beef (mess) ₩ bbl.	16 00 @24 00	16 50 @24 00
Saltpeter ₩ lb.	22	22
Spelter (plates)	9½@ 11½	10 @ 11½
Steel (Am. cast) ₩ lb.	13 @ 22	18 @ 22
Sugar (brown) ₩ lb	9 @ 16	10½@ 15½
Wool (American Saxony fleece) ₩ lb.	72 @ 75	72 @ 75
Zinc ₩ lb.	14 @ 15	14 @ 15
Gold	1 38	1 40½
Interest (loans on call)	7	5 @ 6

NEWSPAPER ENTERPRISE.—One day last week the New York *Daily Times* published an elaborate speech delivered before the Legislature of Georgia by Alexander H. Stephens. It was reported exclusively for the *Times* by telegraph at an expense of fourteen hundred dollars.

THE hydrate of magnesia, formed by calcining the chloride or nitrate at a red heat, sets very soon on the addition of water, without losing its good qualities. It may thus be cast in molds like ordinary plaster. It may be mixed with pounded marble for the purpose of giving it a grain or color.

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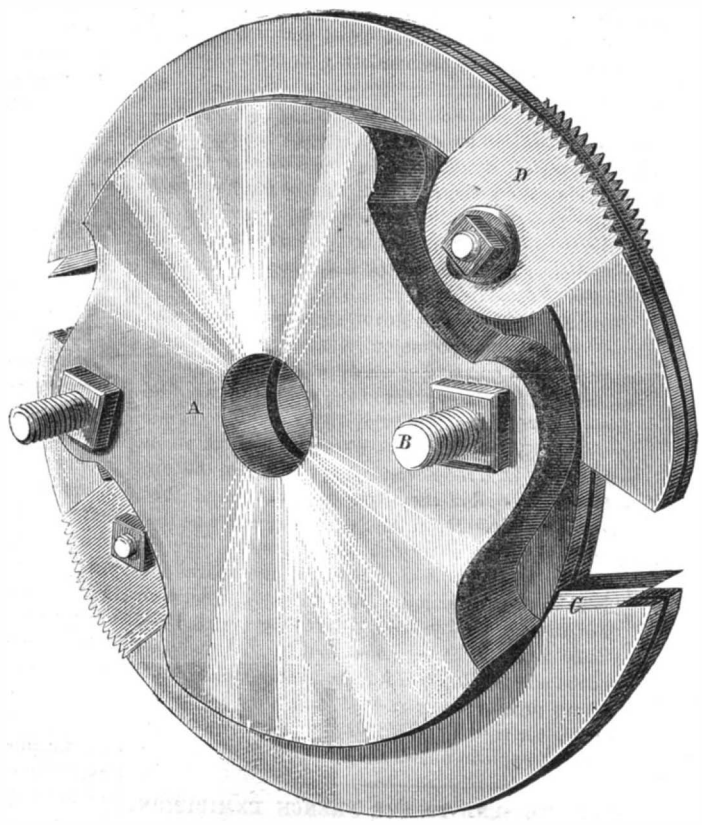
Improved Grooving Tool.

The ordinary method of making grooves in carpenter work is to use a peculiar kind of plane, called a plow, and run them out by hand. This operation is slow and laborious. A much better way of doing it is to employ a tool for the purpose, thereby accomplishing the work much better and in much less time. Such a tool is here illustrated.



TAYLOR'S GROOVING TOOL.

It is a simple combination of parts to effect the object; being merely two plates, A, connected by bolts, B, and having cutters, C, between.

These cutters can be of any desired width or shape, and may be used for sticking sash beads or molding for other purposes. In connection with them are the toothed cutters, D. These line up the track of the cutting tools, so that the edges are made neat and clean, and the chisels prevented from binding in the groove, or making rough work. All the parts are capable of accurate and minute adjustment, and the stuff may be run either under or over it. It is a very useful implement, and was patented through the Scientific American Patent Agency, Oct. 15, 1861, by J. L. Taylor. For further information address patentee, No. 66 West Thirteenth street. S. C. Hill, No. 12 Platt street, sells the implement.

Safe Passenger Ships.

A correspondent of the London *Shipping Gazette*, wrote to that paper as folows:—

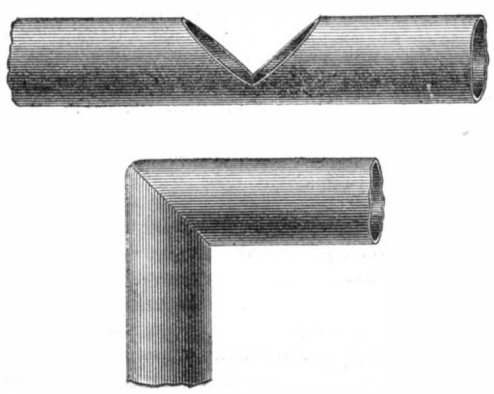
"The disastrous losses at sea which have occurred from year to year, have engaged the earnest and serious attention of gentlemen known in the engineering profession, who have suggested what appears to me the only system by which security and reliance can be placed in case of accidents at sea. It is based upon the principle of the pre-occupation of the cellular spaces by a suitable quantity of prepared material bonded together, of the highest practical character, so as to effectually exclude the water from the interior of the safety compartments, thus maintaining the buoyant principle unimpaired, and preventing the possibility of foundering at sea, by which human life is placed in jeopardy without the chance of help being afforded to them; for it is a mere delusion to suppose that vessels constructed upon the system of compartmental and cellular spaces, professing to be air-tight, can be considered to be safety ships, for, when water-logged by the smallest rupture displacing the air, the consequences must be obvious; and bulkheads, erroneously called water-tight compartments, amount to nothing when, by collision, the sides of the vessel are penetrated, and she becomes unmanageable. As yet no effectual remedy has been practically applied to meet such serious evils. The plan by which this object is sought to be accomplished is, to construct ships specially for the safe conveyance of passengers from ports in the United Kingdom to Australia and other colonies, on the principle now universally adopted in railway traffic—that is, the separation of the passenger from the goods traffic—thus affording to the ocean-traveling public the advantage of high rates of speed, comfort, and first-class accommodation in unsinkable ships, without their being subject to the annoyance which is experienced when sailing in ships carrying cargo. The vessels should be so designed, that although the hold may by any casualty become full of water, the ship cannot sink, but simply be slightly more immersed upon an even keel; and although the speed in consequence will be diminished, she will still be navigable, instead of foundering with all on board."

New Method of Making Sulphuric Acid.

Says the correspondent of the London *Chemical News*:—I read in *Les Mondes* of a new mode of manufacturing sulphuric acid without leaden chambers. It does not appear to be very successful, at least nothing is saved in the cost of production, but the acid must be free from lead, which is some advantage. In place of a chamber, the inventor, M. Verstreat, passes the sulphurous and nitrous vapors into a series of earthenware *bonbonnes* without bottoms, piled one on another so as to form a sort of column; several of the columns communicate. The *bonbonnes* are filled with pieces of coke; steam is passed in as required; and the acid condenses on the coke and trickles down into a reservoir below, to be afterward concentrated in the usual way.

TO TURN AN ELBOW.

If we attempt to bend an elbow in a brass or copper pipe, unfilled with resin, it bulges out at the sides and is dented in the middle, resulting in an unsightly piece of work. A very neat elbow can be made in a small pipe by cutting out a portion in the center, bending the pipe over and soldering the parts, as



shown in the engraving. If desired, a gusset can be put underneath the pipe, so as to make it stronger.

This is, of course, best adapted for light work, but it is at the same time quite strong. Where gas fitters' elbows cannot be readily obtained, it is an expeditious method of turning an elbow. For some purposes, also, pipes look better to have square corners; with this plan they are easily made so.

MILK PRESERVING CAN.—A new milk can, constructed on the principle of a water cooler, is about being introduced in this city by M. M. Clark, of Monroe, N. Y. It is claimed that milk may be kept sweet for several days in the hottest weather by the use of this can.

Nitroglycerine for Blasting.

The *Berg-und Huttenman nische Zeitung* states that among other disadvantages of Nobel's nitroglycerine is the fact that it freezes at a temperature very probably above 32° Fah. It is said that even at a temperature of 43° to 46° Fah. the oil solidifies to an icy mass, which mere friction will cause to explode. It is probable, however, that the freezing point of the oil lies somewhat lower than is here stated, though as yet no exact determination of the freezing point of the oil has been made. A newspaper from Hirschberg, in Silesia, gives a sad account of an accident caused by the frozen oil exploding by friction. Nitroglycerine is there being used in making a railway tunnel. It was kept in glass vessels, packed in straw and placed in baskets, each vessel containing one-fourth to one-eighth of a hundredweight of the oil. For several days the oil had been frozen. It was carefully handled, and pieces were separated by means of a piece of wood and put into the boreholes, and it was found that the frozen nitroglycerine exploded quite as well as the fluid. One day an overseer at the shaft hit upon the unlucky idea of breaking into pieces with a pick a seven or eight pound lump of the frozen nitroglycerine. The blow caused the mass to explode, and the unfortunate man was blown up into the air, and fell back into the shaft, some forty or fifty feet deep, while two workmen who were making cartridges a short distance from him luckily escaped with slight injuries.

Useful Hint to Housekeepers and Others.

An article in a late number of an English magazine, on the subject of the fracture of polished glass surfaces, says:—

"It is a fact known to the philosophical instrument makers that, if a metal wire be drawn through a glass tube, a few hours afterward the tube will burst into fragments. The annealed glass tubes used for the water gages of steam boilers are sometimes destroyed in this way, after the act of forcing a piece of cotton waste through them with a wire, for the purpose of cleaning the bore. This will not happen if a piece of soft wood is employed. The late Andrew Ross informed me that on one occasion, late in the evening, he lightly pushed a piece of cotton wool through a number of barometer tubes with a piece of cane, for the purpose of clearing out any particles of dust. The next morning he found most of the tubes broken up into small fragments, the hard silicious coating of the cane proving as destructive as he had previously known a wire to be."

In these times, when glass lamp-chimneys are in such wide use, it is of no little importance that this fact should be made known. Thousands of persons who have been in the habit of using wires, table forks, and a variety of metallic articles in the washing of these chimneys will, in the above-stated fact, find the reason of their chimneys so often snapping to pieces on the lamp.

[This is rather too general. Merely passing a rod through the tube will not break it unless the surface technically called "fire polish" is scratched.—EDS.

A FEW days since some person threw a lighted Pharaoh's serpent into the bear pit in the Zoological Gardens, in the Jardin des Plantes, Paris. The bear attacked the serpent and set his coat on fire. A plunge in an adjoining tank extinguished the flames, but not until the animal had sustained serious injuries.

CLAY pipes to the number of 14,000 a week are manufactured at an establishment in Concord. The clay used is imported from England, and costs $25 a ton.

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Contents:

(Illustrations are indicated by an asterisk.

*Three-Stitch and Embroidering Attachment for the Wheeler & Wilson Sewing Machine..... 159
Workshops of Manchaster, Eng..... 160
Engine-room Skylights..... 160
Notes on New Discoveries and New Applications of Science..... 161
Foreign Intelligence..... 161
*Birkey's Gas Heater..... 162
*McNamee's Jar Arrester..... 162
Recent improvements in Marine Engineering..... 162
A Steeple Jack at Westminster 163
*To Strike a Circle with a Pencil..... 163
Rusty Iron..... 163
Cold Iron on Melted Cast Iron 163
Hints to Molders..... 163
Shellac Solvent..... 163
A Believer in Witch Hazel.... 164
Regulating the Electric Light 164
The Flickering of Hot Air.... 164
The Avery Engine..... 164
African Iron Workers..... 164
Filling a Vacuum..... 164
Torpedoes and Schoolboys... 164
Notes and Queries..... 164
New Inventions..... 165
New Publications..... 165
Another Patent Swindle..... 165
Markets for the Month..... 165
*Taylor's Grooving Tool..... 165
Safe Passenger Ships..... 166
New Method of Making Sulphuric Acid..... 166
*To Turn an Elbow..... 166
Nitroglycerine for Blasting... 166
Useful Hint to Housekeepers and Others..... 166
Tubular Boilers..... 167
What to Send to the French Exhibition..... 167
To Preserve Iron Ships from Rust..... 167
Patent Claims....168, 169, 170, 171
*Lewis's Pea Sheller..... 174
*Justice's Pressure Test..... 174
Tubular Boilers..... 74

TUBULAR BOILERS.

Many boiler explosions have occurred of late at the West, and almost every mail brings intelligence of some new disaster. To judge from the newspapers and from letters we receive, the traveling public in that region seem to be panic stricken.

Almost the first question passengers ask when they come on board is, "Has the boat got tubular boilers?" says a correspondent, and naturally enough all the explosions thus far have been boilers of that class We shall show hereafter why it is natural.

When steam generators of this kind were first introduced here, there was a universal dislike to them among a certain class of engineers. They were denounced as "dangerous," as "powder magazines," as "hell kettles" and numerous other slang names. It was soon found, however, that tubular boilers were no more "dangerous" than others, if properly cared for, and that, if explosions occurred, it was not from any inherent defect in the system, but by reason of gross neglect on the part of those in charge. It is not the boiler which is dangerous, but the men in charge of it.

As tubular boilers generate steam more rapidly than flue boilers, they use more water. The fire surfaces being finely divided, so to speak, or spread in small areas through a large body of water, are liable to get over-heated very rapidly if from any cause the supply of water is stopped. And, since they always work at higher pressures, constant and intelligent care is needed to prevent them from being injured.

The boilers on the Mississippi river are not exactly what would be called tubular boilers in this part of the country, since, if we are properly informed, the majority have tubes five inches in diameter. It is not the size of the pipe that determines the character of the boiler, for a tube is a tube whether five inches or five feet in diameter, so to all intents and purposes these boilers are tubular boilers, having large fire surface and small water spaces.

Where heat is rapidly conducted through water, as in iron tubes, the water is repelled from the hot surfaces, and dirty water, such as that in Western rivers, more rapidly than clean. Moreover, from the method of setting the boilers they are unequally heated, so that one side may be intensely hot while the other is comparatively cool. The boilers in the center of a gang of five, being set in a row, must necessarily receive a great portion of the heat while those outside have not so much; the result would be to make steam faster in the middle than in the other boilers, and not only cause them to foam but to drive the water out from one into the other. This is not uncommon, and many engineers have noticed in a gang of boilers that rapid firing, as with wood, will give three gages of water in a boiler that was scant, and less in the other that was full.

Dirty water, as we have before remarked, is very bad for any boiler, but particularly for these. Our engineer correspondent says: "I have seen the spaces between the flues entirely stopped up, so that they had to be drawn to clean them. Where mud accumulates to this extent, it is certainly not difficult to account for the explosions, or rather collapses, since most of the accidents are of this nature.

The remedy is to use more care, and some means to prevent mud from accumulating so fast as to stop up the spaces.

We print elsewhere an extract from the *New Orleans Delta*, which evinces a singular spirit. It is not the part of wisdom to denounce tubular boilers because some passengers leave the boats fitted with them. As well might every one stop traveling on railroads, for all locomotives are tubular boilers of a much more "dangerous" type than those which have exploded.

Tubular boilers make steam so much cheaper and more rapidly than common return-flue or cylinder boilers, that they should be used everywhere when they can be. In all places where fuel is scarce we find them; in all cities, in railways, in steamers, in steam fire engines, and in factories—wherever, in short, steam is used as a motive power. It is too late in the day to decry them, and they will eventually find their way into general use on the Mississippi river as they have in all other countries. In the steam fire-engines are tubular boilers where the tubes are only $\frac{3}{4}$ths of an inch in diameter, and the spaces between $\frac{1}{4}$th of an inch, and the fire is so forced by the draft and exhaust that the blaze comes out of the top. One hundred and eighty, two hundred, and much higher working pressures are carried, and they are in use all over the country, every day, for hours at a time; they don't explode unless neglected.

WHAT TO SEND TO THE FRENCH EXHIBITION.

A writer in the *Daily Times* of the 11th ult. discussing this subject says:—

The importance of our being well represented at the great exhibition of 1867, is generally admitted, but the fact that "Yankee notions" alone, the staple of our provincial fairs, will neither represent or glorify us in the world's competition, has not been sufficiently impressed upon the right people. It is labor lost to tell Sniffkins, of Bungtown, patentee of the great American back-action tooth-pick sharpener, that his invention does not embody the engineering genius of this people, and Smith, of Smithville, that in his Union hen-persuader are not centered the mechanical hopes of the country.

It should be impressed upon our real thinkers and workers in the useful arts that they should, that they must, undertake this matter of national advertising in earnest. English constructors crowd the aisles of every international exhibition with their machines and their book orders for duplicates from every manufactory and public work in Christendom. What did it profit a French engineer to send locomotives away to London in 1862? Successful competition with Manchester and Newcastle, not only in the markets of the world, but in England. French locomotives are already ordered for English lines. Why should Austrian, Belgium, Swiss, and Swedish builders send full-sized steamship engines to the World's Fair? Only to show their neighbors—and that successfully, as the result has proved—that other people than John Bull can make these things upon good models and at reasonable prices. But what foreigner or what pioneer manufactures or public carrier, in the newly civilized parts of the globe, would think of coming to America for the best machinery.

The writer commits a common mistake. He argues upon the ground that inventions are generally made for notoriety, whereas they are designed to be useful and accumulate wealth with. If there is a demand for tooth-pick sharpeners, certainly "Sniffkins's" opportunity to invent an improved one is not going to be lost. The idea that ingenuity cannot be shown in a tool for an insignificant purpose is erroneous. Surely every person will admit that simplicity combined with efficiency is the great essential of machinery.

The apple parers that shave off a thin skin from the fruit in a minute, where the clumsy fingures of a servant would cut away a quarter of an inch, and be twice as long about it, are not to be ridiculed. Hundreds and hundreds of them are manufactured, and as for the ingenuity displayed in their construction and design—certainly no one will gainsay it.

So, too, with that essentially Yankee invention, the kerosene lamp. Few persons who use them ever reflect upon the several processes the burners go through, the vast amount of work, and the ingenuity of many of the machines used in producing them. One of the most ingenious little pieces of mechanism that has come into our hands lately is a cherry stoner, and it is a one-sided view to suppose that such things exert no influence because they are small.

Some years ago we visited the Crystal Palace in this city but we do not remember seeing any English marine engines. We saw one engine that would go under a thimble, and another two inches high, but they impressed us as specimens of labor lost. So with many other articles of a similar character There were rolls of carpets and piles of tapestry, but of the great machinery we saw but little.

Certain details of engines might be sent with profit, as, for instance, an American steam chest fitted with poppet valves, the trussed connecting rod, the beam used on our steamers, the front links and the valve gear.

These are all essentially native and to the manor born, and the workmanship cannot be surpassed, and on this hint we hope some of our shops will act.

The question to be considered in sending articles to the French Exhibition is simply a commercial one. Our marine engine makers know very well that they have no market there, as the type of engine for marine use most in favor with us is ridiculed abroad with unsparing severity. In the line of stationary steam engines we could not compete with any hope of success; for the prices would be so nearly alike that no margin would be left for profit, and so with all other machines. Instances are not wanting, however, where they have been made and sold in England at lower rates than they could be here, but these are not the rule, but the exception.

It is a mistake, however, to suppose that our engines are not used abroad, simply because they were or are not shown at exhibitions.

On the Danube river there are a number of American steamboats and engines running, and our marine engine shops have for years found markets for their products in Siam, in China, the West Indies, South America, and all the British Colonies. What would be gained by sending heavy marine engines to France?

We can bear witness that foreigners are continually coming to America for the best machinery, and we are frequently in receipt of letters from correspondents abroad, in Great Britain, asking for the best machines for certain purposes. Would any more come if we sent an engine there?

We are enthusiastic in respect to the representation of our manufacturing interests abroad, but this matter of fairs is beginning to be held in low esteem, for it is found that a few monopolize the prizes, and that dishonest officers award themselves premiums, and leave the exhibitors the expense and loss of time for their share.

TO PRESERVE IRON SHIPS FROM RUST.

In a recent issue of the SCIENTIFIC AMERICAN we referred to an invention wanted to preserve iron clad vessels from the destructive effects of rust, which has become a very serious matter in England and France. Hon. Wm. D. Kelley, in a recent speech on the Navy Appropriation Bill, notices this paragraph, and thereupon founds an objection to the re-establishment of a navy yard at Pensacola.

Judge Kelley takes the ground that naval supremacy among nations is hereafter to be settled on land. That nation which has the amplest supply of forges, furnaces, and rolling-mills, of iron and steel, and the most workshops and skilled workers in iron and steel, will be the master nation on the sea. The question is one merely of machine power and skill in working the metals.

At Pensacola, or in that vicinity, there are neither forges, furnaces, machine shops, nor skilled workmen. Nor is the water at or near that yard fit to float an iron navy not on active service.

In reference to the want in France of a composition to prevent the action of rust, he remarked that the fact thus disclosed is nature's guarantee of the supremacy of the American navy. More fortunate than England and France, we have fresh-water harbors in which we can float iron vessels. Fresh water is a cure for the diseases inflicted upon them by salt water.

This subject is one that concerns the interes the whole country, and deserves careful considera

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☞ Pamphlets containing the Patent Laws and full particulars of the mode of applying for Letters Patent, specifying size of model required and much other information useful to inventors, may be had gratis by addressing MUNN & CO., Publishers of the SCIENTIFIC AMERICAN, New York.

52,809.—Harvester.—A. S. Acker, Albion, N. Y.:

I claim the thimble, E, constructed of india-rubber, leather, or other suitable elastic or yielding material, fitted in the eye of the sickle bar to receive the pitman, C, substantially as and for the purpose set forth.

[This invention is designed to prevent cramping and binding in the pitman box, and the consequent breaking of the sickle shank should any sudden strain come upon the pitman, and this object is accomplished by forming a ball upon the wrist pin, and making the bearings in the pitman box concave to fit upon said ball. The pitman box is also made with an oil reservoir, to keep the joint always lubricated.]

52,810.—Apparatus for Punching.—John F. Allen, New York City:

I claim the arrangement and combination of the punch, D, or its equivalent, secured into the screw block, C, the pitch of the thread on the block, C, and acting together in such a manner that while the punch, D, is prevented from turning, the same will be forced downward, by a power applied to the block, C, the whole being arranged and combined in the manner and for the purpose substantially as described.

52,811.—Device for Driving Fence Posts.—John Anderson, Wankesha, Wis.:

I claim the combination of the truck frame, A B B', standards, C C, uprights, F F, shank, D, hammer, E, rope, b, windlass, G, clutch, H, and stop or lug, g, all arranged and operating substantially as explained

[The object of this invention is to produce a machine intended more particularly for farmers use, whereby fence posts may be driven into the ground in a quick, easy and inexpensive manner.]

52,812.—Paper Shirt Bosoms.—James C. Arms, Northampton, Mass.:

I claim a paper bosom, having a central plait formed by folding the paper as shown and described with or without the points, D, of sufficient length to reach around the neck and provided with the button holes, a, the whole constituting a new article of manufacture.

52,813.—Puddling Furnace.—Christopher D. Baker, Wheeling, W. V.:

First, I claim constructing a puddling furnace entirely above ground, substantially as described.

Second, I claim surmounting the iron chamber with fire brick, substantially as and for the purpose described.

Third, I claim surmounting both the iron chamber and the fire chamber with fire brick, substantially as and for the purpose specified.

Fourth, I claim providing the raised border or chill of the iron chamber with a groove, passage or channel, to adapt it to be preserved from heat by the application of water or air as described.

Fifth, I claim making the raised border or chill of the iron chamber of wrought iron as described.

Sixth, I claim the described method of arranging the fire grate relatively to the iron chamber.

Seventh, I claim setting the stack close up against the furnace in the manner and for the purpose set forth.

Eighth, I claim the passage or spaces, I, in the brick work for conducting off the air and steam which eminates from the groove in the chill, as described.

Ninth, I claim joining two furnaces back to back in any manner substantially as described.

Tenth I claim the combination of three main walls with two stacks as and for the purpose described.

51,814.—Machine for Raking and Loading Hay.—W. W. Barnes, Lyme, N. H.:

First, I claim the apparatus consisting of the frame, B, provided with the belt, C, the stationary rake, E, and pivoted rake, D, when secured to the rack, A, in the manner shown and described.

second, The combination of elevator the stationary rake, E, and the adjustable hinged rake, D, as and for the purpose set forth.

52.815.—Drilling Machine.—Truman P. Bashford, Decatur, Mich.:

I claim the arrangement and combination of the drills, B, platform, E, ropes, I, treadle, J, and weight, K, when operated by crank, F, or belt, G, as herein described and for the purpose set forth.

52,816.—Drills for Oil and other Wells.—Horatio Bateman and David Cumming, Jr., New York City:

First, We claim the cam, E, in combination with the sliding frame, D, and the spring, I, for the purpose specified.

Second, In combination with the above, the spring, G, for the purpose of operating the jars, substantially as described.

52,817.—Apparatus for Folding Linen Bosoms.—Hubbard Beele, New Haven, Conn.:

I claim the combination of folders with the creasing rolls, D and D', substantially in the manner and for the purpose specified.

52,818.—Metallic Cartridge.—Hiram Berdan, New York City:

I claim as a new article of manufacture, a metallic cartridge, having a stem projecting from the base of the bullet into a cavity at the rear end for the fulminate, the case being made with a flange at the rear end and tapering toward the forward end, and drawn down upon the bullet by means of a swage or die whereby the external surface of the cartridge can be made more uniform, less liable to explode in the act of construction or transportation, and the shell more readily extracted after being fired.

52,819.—Corn Harvester.—Thomas Boyd, Des Moines, Iowa:

I claim the revolving frame, B, in combination with the sliding frame, C, applied to a harvester or a mounted frame provided with a cutting device, substantially as and for the purpose herein set forth.

I also claim the turning of the frame, B, through the medium of a windlass, F, arranged to serve as a driver's seat.

I further claim the clamp, K, or its equivalent in combination with the revolving or turning frame B, sliding frame, C, substantially as and for the purpose specified.

52,820.—Railway Brake.—E. R. Brown, Maunch Chunk, Pa.:

I claim as an improvement in railroad car brakes, the arrangement of the levers, D D, and levers, E E in combination with the rods, F F*, to operate in the manner as herein described.

[This invention has for its object, the dispensing with the brake or shoe bar hitherto universally used and which is attended with considerable annoyance on account of their liability to break and which not unfrequently is the source of serious accidents.]

52,821.—Hemp Break.—George M. Cambell, Lewistown, Ill.:

I claim the adjustable slats, l n, keys, s, and head blocks, m m, and w w, when the several parts are constructed, arranged and operated as and for the purpose set forth.

52,822.—Clasp for Looping Ladies' Dresses.—Henrietta H. Cole, N. Y. City:

I claim, First, The combination of the jaws, B B, with a frame, A, and spring, C, substantially as and for the purpose herein specified.

Second, I claim the spring, C, in combination with the jaws, B B, cross bar, a, and frame, A, substantially as described.

Third, I claim the noses, D D, arranged in relation to each other and the jaws, A A, substantially as and for the purpose specified.

Fourth, I claim the combination with each other of the frame, A, jaws, B B, spring, C, noses, D, and cross bar, a, as herein shown and described.

52,823.—Broom Head.—N. B. Cooper, Gratis, Ohio:

I claim the barbed end of handle, d, in combination with the broom head, A, furnished with straps, C, the whole constructed and operating as and for the purpose substantially as herein set forth.

52,824.—Water Elevator.—James E. Cronk, Poughkeepsie, N. Y.:

I claim, First, The revolving crank mounted on a stem which is provided with a nose in combination with one or more tappets, on the windlass or on its shaft constructed and operating substantially as and for the purpose set forth.

Second, The slotted bar, D, applied in combination with a windlass which is provided with a detachable or adjustable crank, substantially as and for the purpose described.

[This invention consists in the use of an adjustable crank and the stem or head of which is provided with a nose or projection in combination with one or more tappets on the end of the windlass shafts on which said crank turns loosely in such a manner that, by turning the crank in one direction, the nose can be made to come in contact with one of the tappets and to impart motion to the windlass shaft, and by turning the crank in the opposite direction, the nose releases the tappet, and the windlass shaft is free to revolve and to let the bucket or other articles suspended from its rope descend by its own inherent gravity.]

52,825.—Fabric for Carpet and other Purposes.—Thomas Crossley, Bridgeport, Conn.:

I claim, First, The fabric composed in the manner hereinbefore described suitable to be dyed or printed as a carpet or as the face of a carpet.

Second, The carpet composed of said face, and a jute linen or other back either with or without being united by an india-rubber or other vulcanizable gum.

Third, The fabric with the loops cut and the face finished in the manner above described forming a velvet, or other face similar to velvet and other tufted carpets.

Fourth, Also the uniting of the face with the back of such fabrics by such other sheets of cement or water-proof compound which will serve as an equivalent for vulcanized india-rubber.

52,826.—Machine for Forming Horse Collars.—Frank Cunningham, Chicago, Ill.:

I claim the arrangement and combination of the parts, B C D and A, substantially as set forth.

52,827.—Rock Drill.—John D. Dale, Rochester, N. Y. Antedated Feb. 16, 1866.:

First, I claim the arrangement of the slide, C, pulley, D, rope, E, and lever, N, in the manner and for the purpose described.

Second, The prop, o, applied in combination with the nose, n, on the side of the rising and falling slide, C, constructed and operating substantially as and for the purpose described.

Third, The ratchet worm, g, mounted on a shaft, b, which turns up and down, in combination with a worm wheel, f, mounted on the shaft of the reel, I, and with a hand lever, j, or its equivalent, constructed and operated substantially as and for the purpose specified.

Fourth, The tightening pulley, M, and hinged lever, N, applied in combination with the rope, q, and with the belt, K, running on the pulleys, J L, substantially in the manner and for the purpose set forth.

Fifth, The application of a crane, P, in combination with the cross bars of the derrick which supports the boring rope, substantially as and for the purpose set forth.

52,828.—Fence.—Morris Dickle, Wellersburgh, Pa.:

I claim the construction of the portable fence as herein described and for the purposes set forth.

52,829.—Composition for Journal Boxes.—George W. Disman, Upper Sandusky, Ohio:

I claim a composition for journal boxes or bearings, composed of copper and glass, and mixed or fused with borax and prussiate of potash, and with or without lead, as herein described and for the purpose specified.

52,830.—Potato Digger.—Alpheus Dolloff, Lake Village, N. H.:

First, I claim the combination and arrangement of the duplicate beams, A A, each provided with an adjustable caster wheel, t, and the two beams being connected by oblique brace rods, a a, substantially as and for the purpose herein set forth.

Second, I also claim the construction of the driving wheels, B B, with the gear openings, d d, in the peripheries thereof, in combination with the pinions, K K, gearing into said openings substantially as and for the purpose herein specified.

Third, I also claim the pinions, K K, when made with the surfaces at the bottoms of the recesses between the cogs, for the purpose set forth.

Fourth, I also claim the vibratory bars, P P, for giving a shaking motion to the endless screen, arranged and operating substantially as herein specified.

52,831.—Boring Tool for Oil Well.—Edwin C. Dow, Brooklyn, N. Y. Antedated Feb. 11, 1866:

I claim the combination of the tubular stock, A, the pivoted vibrating rods, a, the hinged cutters, b, and the central sliding rod, B, with its projections, d, and wedges, f, substantially as herein specified.

52,832.—Carriage Wheel.—H. C. and J. W. Drew, Waterloo, Mich.:

First, We claim the use and application of the two bars, K, in combination with the draught pole, J, and the bars, L, and bars, G, and the axles, E E, the whole constructed and arranged as and for the purpose herein set forth.

Second, The movable center chains, H, in combination with the link, I, constructed in the manner and for the purpose herein specified.

Third, The hinges, S S, connecting the bars, L, with the bars, G, constructed and arranged substantially as herein described.

52,833.—Flexible Brush.—Robert N. Eagle, Washington, D. C.:

I claim a two-handled, flexible brush, made substantially as described.

52,834.—Process for Separating Gold and Silver from Ores.—John H. Edward, of Polo, Ill., and John L. Hayes, Boston, Mass.:

We claim the process of oxidizing sulphurets containing the precious metals, and converting them into sulphates by the use of solutions of nitrates for the purpose and in the manner substantially as above described.

52,835.—Carpet Lining.—Joel F. Fales, Walpole, Mass.:

I claim the carpet lining made as above described as a new article of manufacture.

[The object of this invention is to improve carpet lining, such, for instance, as that now known as Harrington's Carpet Lining, composed of a layer of cotton or other soft, flexible substance placed loosely between two layers or sheets of paper. This invention consists in uniting the parts of the fabric by stitching or quilting them together. As now made, the fabric is difficult to handle in the store and also when putting it down on a floor. When made according to this improvement that difficulty is removed, and there is no longer any danger of separating the parts of the fabric or losing the soft filling thereof, or of letting the filling fall and run together.]

52,836.—Plug for Blasting.—Geo. H. Felt, New York City:

First, I claim the combination of cylinders of vulcanized india-rubber or other similar material with screw bolts or tubes acting separately and being detached by means of which increased outward pressure is produced, substantially as and for the purposes herein specified.

Second, Igniting the charge at any desired point, by extending the inner tube within the charge or cartridge to the point desired, substantially as and for the purposes herein specified.

52,837.—Quartz Crusher.—John Fleck, Santa Cruz, Cal.:

First, I claim the two jaws, A A, provided with two upper inclined parts, a a, and lower vertical parts, b b, in connection with oscillating frame or walking beam, B, and frames, F F, all arranged to operate in the manner substantially as and for the purpose set forth.

Second, I further claim the combination of the jaws, A A, oscillating frame, B, and the wheels, l f, for securing the upper ends of the jaws in the frame as herein specified.

[This invention relates to a new and improved machine for crushing quartz, and it consists in the employment or use of two jaws arranged to operate with a reciprocating motion.]

52,838.—Machine for Pressing Straw.—Elias T. Ford, Stillwater, N. Y.:

First, I claim the compression of a gavel of straw or other material of like fiber, forming a bundle or bale by twisting and holding the same in place, and winding it spirally in an opposite direction to that of the twist with a twisted band, t, of straw or similar materia, formed separate by and rendered from the spool, J, before the gavel is relieved from its end gripes, X V X Y, substantially as described.

Second, I also claim the arrangement of tubular centers, E E, tension shafts, F F, gears, D D, pinions, n n, gear, h h h h, wrists, X X X X, bearings, r r r r, cords or chains, y y y y, hooks, a a a a, guard plates, C C, and sectional frames, B B B B, resting upon base frame, A, substantially as and for the purpose specified.

Third, I also claim the employment of the ratchet of the left gear, D, with catch, Z, and spring, W, for holding the center, E, and therewith the left extremity of gavel, t, in its compressed state, while motion is imparted to the right center and gavel in the application of band, t, substantially as described.

Fourth, I also claim the arrangement of the rear driving shaft, n, with the right and left clutches, b b S, pinions, G G, levers, R R, connecting rod, m, pivots, T T, right pullies, P P4, substantially as and for the purpose described.

Fifth, I also claim the arrangement of the lower and stationary arms, L L7, upper concave, L3 L3, and rod, b2, hinged in the bar, Q Q, in combination with standards, K5 K5, having the upper center and spool, J, mounted thereon, in the manner and for the purpose set forth.

52,839.—Hose Coupling.—John E. Ford, Memphis, Tenn.:

I claim the sleeve, D, provided with longitudinal slots, c c, and fitted on the butt, A, as shown, in combination with the projections, e e, of the butt, A', the ring, E, having grooves, d d, in its surface, provided with beveled or oblique projections, f f, at its rear side, and fitted on the sleeve, D, substantially as and for the purpose herein set forth.

[This invention consists in the employment or use of a sleeve attached to one butt of the coupling and a ring fitted on said sleeve—both the sleeve and the ring being slotted to receive projections on the other butt of the coupling and the ring provided with beveled or oblique surfaces, whereby lengths of hose may be connected and disconnected with the greatest facility and very expeditiously.

52,840.—Fanning Mill.—John W. Free, Richmond, Ind.:

First, I claim the adjustable slotted hinge, A, when used for the purposes and in the manner set forth.

Second, The adjustable sides, C C, in combination with the slotted shoe bottom, bar, L, and strap, B', all constructed and arranged substantially as and for the purposes set forth.

Third, The notched bearing, D, in combination with the notched plate, E, when used as and for the purpose set forth.

Fourth, I claim the combination of the slotted hinge, A, and the slotted suspending straps, F F, with the adjustable shoe substantially as and for the purposes set forth.

Fifth, The adjustable grooved grain board, J, in combination with the sides, C, substantially as and for the purposes set forth.

Sixth, I claim the combination of the dove-tailed groove bar, G, with the dove-tailed fan door, H, and wind hole, I, substantially as and for the purposes set forth.

55,841.—Grain Separator.—John W. Free, Richmond, Ind.:

First, I claim the combination of the cam, A, bar, D, door, and cleat, B, when used in the manner and for the purpose set forth.

Second, I claim the double hinge, Y, when used in the manner and for the purpose set forth.

Third, I claim the hook-shaped ratchet, K, in combination with the suspending rods, V, and the shoe, when used as and for the purpose set forth.

Fourth, I claim the bell crank, J, in combination with the double hinge, Y, when used to give a longitudinal as well as transverse vibrations to the shoe thus producing a rotary or circular motion by means of a rod attached, substantially as and for the purpose set forth.

Fifth, I claim the foot, m, of the frame in combination with the feet upon the other end, substantially as and for the purpose set forth.

Sixth, I claim the rocking lever, R S, in combination with the shoe and screen, x, when employed substantially as and for the purpose set forth.

Seventh, I claim the wind guide, P, in combination with the spring bolt, Q, substantially as and for the purpose set forth.

Eighth, I claim the box, T, in combination with the shoe when constructed and used substantially as and for the purposes set forth.

Ninth, I claim the adjustable corrugated plates, U and G, constructed and used substantially as and for the purposes set forth.

52,842.—Cigarette Mold and Box Combined.—Norman T. and Silas B. Gassette, Chicago, Ill.:

We claim the combination of match box, tobacco box and cigarrette mould.

Second, The clamp with projections for fastening wrappers to the top of the mold.

Thirdly, The complete cigarette mold as made by the combination of its parts represented by figures 5, 10 and, all substantially as described and for the purposes set forth.

52,843.—Harvester.—Daniel D. Gitt, Arandtsville, Pa.:

First, I claim the combination of the jaws, b' b', which have a place between them, so as to allow side play of the pitman rod and prevent up and down play thereof, with the ball and socket joint, A B', substantially in the manner and for the purpose described.

Second, Connecting the lower end of the pitman rod, A, to a reciprocating slide, C, which is allowed to rock about a vertical pin, g, that connects said slide to the sickle, S, substantially as described.

Third, The combination of the horizontally-oscillating slide, C, with its upper and lower bearings, D' D, and the elevated guide, g, on the sickle, substantially as described

Fourth, The combination of a jointed pitman, A B', and an oscillating slide which is supported upon bearings arranged above the plane of the sickle substantially as described.

Fifth, Pivoting the sickle bar of a harvester to a reciprocating slide, C, substantially as described.

52,844.—Fertilizer.—James Gould, Lexington, Mass.:

I claim the process of formation of a fertilizer by fermenting mixtures of gas lime, lime, salt, and animal and vegetable or vegetable animal matter, as above described.

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52,845.—Edge Plane for Boots and Shoes.—John C. Grunn, Peoria, Ill.:

I claim the metallic box, A, the metallic block, C, the plane bit, O, the drum, D, and the covered handle, B, arranged substantially as and for the purposes herein set forth.

52,846.—Amalgamator.—Edw'd Hamilton, Chicago, Ill.:

I claim in apparatus for extracting gold and silver from auriferous and argentiferous ores, operating substantially as herein described, the arrangement of the annular receivers, discharge pipes, and receiving boxes, as and for the purpose herein set forth.

52,847.—Sewing Machine.—John Hanlon, Newark, N.J.:

First, I claim the arrrangement of the lever, A, having its perforated short arm, A', behind the fulcrum, l, the fixed perforated arm, B, the spring, C, and standard, D, as herein described and represented.

Second, I claim the described arrangement of the needle bar, E, parts. F F', for forming the adjustable groove, c, the disk, b, crank pin, N, and driving shaft, s.

Third, I also claim securing the needle bar in place by means of plates whose adjacent faces are joined by a tongue and groove, the needle bar being guided partly by recesses made in the ends of the brackets, p p, and partly by shoulders on the said plates, substantially as shown.

Fourth, I also claim the manner here shown of driving the shuttle rock shaft, to wit: by means of the gear wheels, O O', short shaft, t, crank wheel, P, pitman, Q, and vibrating arm, R, as described.

Fifth, I claim the combination of the shuttle, U, bobbin, V, socket, W, axle, X, and opening or groove, y, said parts being constructed in the manner and for the purpose herein specified.

52,848.—Car Brake.—O. J. Hardgrove, Canton, Ohio:

I claim, First, Constructing a car or a wagon brake of two pivoted shoes, B B', which are provided with side clamps, a a, and acted upon by means of a spring, g, in its equivalent, substantially as described.

Second, The construction of each shoe, B B', with a side clamp formed on it, substantially as described.

Third, The combination of the T head rubber spring, g and a coiled spring surrounding its neck, when these parts are applied to a two-part car brake which is constructed substantially as described.

52,849.—Watch Hand.—Geo. Hastings, Waltham, Mass.:

I claim the hereinbefore described improved manufacture of watch or time-piece hand, having its socket tube, its head and finger formed in one piece of metal, substantially as set forth.

52,850.—Gold and Silver Washing Apparatus.—Joshua Hendy, San Francisco, Cal.:

I claim, First, The guide fingers, T T, attached to distributor, G, working in slides, V V, or their equivalent.

Second, The riffle bars, R R, coated with mercury, for the purpose as herein set forth.

Third, I claim the riffle bars, R R, guide fingers, T T, and slides, U U, in combination with distributor, G, and pan, B, with convex bottom, and central outlets, e e, substantially as described and for the uses and purposes as hereinbefore set forth.

52,851.—Harvester.—Benjamin Hess, Manor Township, Pa.:

I claim the construction of the cogged cutters, F' F, substantially as specified, so that they form in themselves the links of an endless chain cutter, when said cutters are used in combination with the notched pulleys, A' A', arranged and operating as described.

52,852.—Brick Machine.—Wm. H. Hovey, Springfield, Mass. Antedated Feb. 16, 1866:

I claim, First, The combination of the cam, L, knee-joint levers, G H and G' H', connection, B, and plungers, F F', when used in combination with a suitable feeding apparatus and frame, substantially as described.

Second, The combination of the cam, T, one or more levers, S S, suitably connected thereto, one or more cutters, O P, and a similar number of boxes or channels, l l, through which the clay is forced, substantially in the manner and for the purpose described.

Third, The combination of the cam, T, lever or levers, S S, connecting rod or rods, V, one or two pawls, W, and ratchet, X, and the roller, U, substantially in the manner and for the purpose described.

Fourth, Contracting the channels, l l', at the front, substantially as described,

Fifth, The combination of the pieces, Y Y, rods, y y, and spring, Z, with the channel or channels, n o, substantially as described.

Sixth, Combination of hopper, B, having the opening or openings, e f, in its bottom, with the channel or channels, l l', and a suitable arrangement for forcing the clay along this channel or channels, and for cutting off and removing the same when formed into bricks, substantially as described.

Seventh, Forming the chamber chamber, l, in such a manner that when the plunger reaches the front end of the opening, e f, there shall be sufficient clay in the space between the front end of it and the point to which it must travel to form the amount of brick required, substantially as described.

52,853.—Mode of Sinking Wells.—Benj. J. C. Howe, Syracuse, N. Y.:

First, I claim a tube to be used in sinking wells when a point or foot, F, is thereunto attached, constructed and operated substantially as herein set forth and described.

Second, In a pump and well tube, the adjustable sections, A A, in combination with the bars, B B, and pins, c c, when constructed in the manner and for the purpose herein described.

52,854.—Window Blind.—E. B. Hungerford, Elmira, N. Y.:

I claim a window blind or ventilator slat constructed of glass, of any desired color, having the journals, C, formed thereon solid with the body of the slat, as and for the purposes set forth.

52,855.—Suspended.

52,856.—Coal Hod.—Edwin A. Jeffery, New Haven, Conn.:

I claim a closed coal hod, constructed substantially in the manner as herein set forth.

52,857.—Tassel Hook.—Albert D. Judd, New Haven, Conn.:

I claim the tassel hook having the ornamental metallic washer secured to the surface of the porcelain knob by the end of the metallic arm, as a new article of manufacture.

52,858.—Water Drawer.—L. King, East Cleveland, Ohio:

I claim the lugs, c, and arms, d, arranged in relation to the bail, a, and in combination with the stops, D, and with or without the guide, D', as and for the purpose set forth.

52,859.—Car Wheel.—James S. Kingsland, Stryker, Ohio:

I claim a car wheel cast in three separate parts, secured together as described, and consisting of the side pieces, B C, whose central enlargements form the hub for the spindle and whose outer margins embrace and are bolted to the inwardly projecting flange of the rim, A.

52,860.—Bridge.—Marten Kremser, Cleveland, Ohio:

I claim connecting the chords or articles of bridges to the posts, B', when constructed and arranged substantially as described, and shown in fig. 6, for the purpose specified.

52,861.—Corn Planter.—Henry B. Lansing, Hudson, Mich.:

First, I claim the rear extension, F, of the tooth, D, for the purpose of retaining the tooth a certain depth in the ground, whether hard or mellow, by means of the roller and weights applied to said extension, F.

Second, The manner of attaching the stalk cutters to a wheel planter, in the manner and for the purpose set forth.

Third, The compound lever, B B, in connection with the feed bar, A A, and the rod, c c, arranged in the manner and for the purpose substantially as set forth.

52,862.—Lamp Wick.—C. W. Le Count and Samuel Chard, Norwalk, Conn.:

We claim a lamp wick composed of wool, as a new article of commerce, substantially as described.

52,863.—Deodorizing Offal.—Alfred and Edwin Lister, Newark, N. J.:

First, We claim treating offal, for the purpose of utilizing it, according to the processes above set forth to wit: subjecting the offal to currents of hot air and gases in closed chambers, and at the same time discharging into the furnace which supplies such currents the gases, vapors and exhalations which are driven off from the offal substantially as shown.

Second, We also claim the arrangement, substantially as above shown, of ovens, air receiving chambers, and pipes leading into and out of the same, with or without a system of fans to quicken the circulation of the ingoing and outgoing air and gases.

[The object of this invention is to purify and deodorize offal, both of organic and inorganic matter, and to get it in a condition fit to handle in whatever manufacture or process it is afterward to enter, and it consists in drying and purifying the same by a new process, in which offensive and noxious vapors and exhalations are removed or consumed by means of heat.]

52,864.—Lock.—Joseph Loch and George Bayer, New York City:

First, We claim a key composed of a series of notched disks, a, and operating in combination with the handle, C, the lip, d, or its equivalent, the sliding shaft, E, cog wheel, G, bolt, H, pulley, F, tumblers, E, and notched cog wheels, J, substantially in the manner and for the purpose set forth.

Second, The dog, r, in combination with the rising and falling slice, I, and bolt, H, constructed and operating substantially as and for the purpose described.

Third, The cam, g, on the arm, r, in combination with the stop lever, L, knife, K, and ratchet wheels, J, constructed and operating substantially as and for the purpose specified.

52,865.—Burial Case.—John L. Lovett, John Wippich, and James Wood, Salem, Mass.:

We claim the support, c, placed under the lid or cover and let into the sides, substantially as and for the purpose set forth.

Also the employment of the upper suface of this support for attachment of a plate, substantially as shown and described.

Also constructing the lid with an opening in such manner that such opening shall come respectively over a plate placed upon the support when the lid is closed, and over a plate placed upon the cover when the lid is thrown back, substantially as described.

52,866.—Oil Well Tube Extractor.—James H. Luther, Petroleum Centre, Pa.:

I claim a gripping and lifting mechanism constructed and operating substantially in the manner described.

I also claim, in combination with a mechanism which can be inverted within and made to gripe one of the tubes, a means of locking the rod of such griping mechanism to an upper tube for the purpose of clamping or tying several tubes or sections together, whereby the lifting power may be applied to the upper end of the tubing itself, as set forth.

I also claim separating the sections as described, and shortening up the rod, A, as and for the purposes described.

I also claim the construction of the griping mechanism, as specified, with sufficient play to jaw, m, with a removable jaw, r, whereby the whole may be readily removed at pleasure, as hereinbefore set forth.

I also claim the employment of collars or dogs, e and f, in combination with serated wedges, g or h, substantially as set forth, as a means of affording a ready application of the lifting machinery to the tubes.

52,867.—Clothes Wringer.—David Lyman, Middlefield, Conn.:

First, I claim the spurred piece, E, in combination with the wheels, M and C', or the equivalent thereof, managed relatively thereto and to the rolls of clothes-wringing and washing machines, substantially as herein set forth.

Second, I claim the employment of one or more spurs on the opposite faces of the piece, N, in combination with the perforation, m and c, and with the working mechanism of clothes-wringing and washing machines, substantially in the manner and for the purpose herein set forth.

52,868.—Device for Boring Wells.—Virgil H. Lyon, Plainfield, Ind.:

First, I claim the conical screw mole, A, shaft, c, connecting chains, d and d', cap, B, clamp, N, and cord or chain, R, when constructed, arranged and operated in the manner and for the purpose substantially as set forth.

Second, The table, E, wheels, F and G, pinion, H, posts, O, frictiog rollers, s and v, and windlass, I, when constructed, arranged and operated in the manner and for the purpose substantially as set forth.

52,869.—Manufacture of Ink for Printing Postage Stamps.—James Macdonough, New York City:

First, I claim a sensitive and soluble printing ink adapted for both plate and surface printing may, with glycerin, for the purpose of printing postage and other stamps and preventing the fraudulent removal of canceling marks, substantially as herein set forth.

Second, I claim glycerin in combination with gelatin or an equivalent material adapted to reduce the solubility of ink made therewith, substantially as and for the purpose herein set forth.

52,870.—Guide for Sewing Machines.—James S. McCurly, Bridgeport, Conn.:

First, I claim the guide wheel, a, turning upon a pivot, e, at the end of an elastic arm or spring, c, and applied to the sewing machines, substantially as herein specified.

Second, The straight-edged smoothing piece, m, applied in connection with the elastic arm or spring, c, and in relation to the wheel, x, substantially as herein described

52,871.—Machine for Rolling up Leather.—Joseph E. Merritt, Winn, Maine:

First, I claim a machine for rolling up leather constructed substantially as described.

Second, The combination of the belts, u, with the rollers, E and J, in a machine for rolling up leather, substantially as described and for the purpose set forth.

Third, The combination of the roller, L, with the belts, u, substantially as described and for the purpose set forth.

Fourth, The combination of the pawls, F, and racks, G, with the roller, E, for the purpose of holding the said roller forward while the belts are being removed and replaced, substantially as described.

Fifth, The combination of the racks, M, pinion wheels, N, ratchet wheel, R, and pawl S, with each other and with the roller, L, substantially as described and for the purpose set forth.

[This invention is designed to furnish leather dealers with a convenient machine for rolling up leather for transportation. And it consists of a system of endless belts and rollers so constructed and arranged that the leather, after being laid upon the endless belts, is taken by them and wound around a roller into a firm roll, which can then be tied and shipped from the roller.]

52,872.—Toy Engine and Whistle Combined.—Willis W. Mildrum, East Berlin, Conn., assignors to J. and E. Stevens & Co., Cromwell, Conn.:

I claim the middle cylinder, d, in combination with the piston, e, and its connections l m, wheel, b, and handle, a, constructed substantially in the manner as and for the purpose described.

52,873.—Street-sweeping Machine.—Joseph Miller, Boston, Mass.:

First, I claim arranging the brushes in their section at angles to each other so as to extend from their frames in different directions when by, when they strike the surface to be swept they expand and spread out over a wider surface than they otherwise could.

Second, Hanging the endless brushes or their frames in adjustable slotted bars so as fast as they become worn they can be lowered sufficiently to compensate for their wear.

Third, The arrangement of the double levers, y y, operating on the tail piece or hood, e e, of the cart, substantially as described.

52,874.—Tackle Block.—George Milson, Buffalo, N. Y.:

First, I claim the combination of journal bearings formed in the iron straps, B, and projecting hub, G, with a sheave, H, made fast on the shaft, I, for the purpose set forth.

Second, Making the sheave fast to its axle by means of the bush or fastening pieces, J J, and pin, L, for the purposes and substantially as set forth.

52,875.—Desulphurizing and Disintegrating Ores.—Daniel Minthorn, New York City:

I claim the use of uncombined hydrogen at a high temperature, for the purpose of deoxiding, desulphurizing and disintegrating mineral ores by applying steam either with or without the products of combustion through a chamber containing iron turnings or other suitable absorbent of oxygen in the manner substantially as herein set forth.

52,876.—Machine for Charging Air with Hydrocarbon Vapors.—H. B. Myer, Cleveland, Ohio:

I claim, First, Charging and saturating atmospheric air with the vapor of the light hydrocarbon oils, substantially as and for the purpose herein set forth.

Second, For the accomplishment of this object I claim the perforated coiled tube, C, in the bottom of the tank, A, as and for the purpose specified.

Third, In combination with the perforated tube, C, I claim the perforated disk, D, for the purpose of more perfectly diffusing the air through the oil as set forth.

Fourth, In combination with the coiled tube, C, and perforated disk, D, I claim the double convex disks, d, and air pipe, E, as and for the purpose specified.

Fifth, I claim the tank, H, when provided with the perforated pipe, P, and perforated disk, J, as and for the purpose specified.

Sixth, I claim washing the gas through a bath of water, spirits, or lime water, either separate or combined, as and for the purpose herein set forth.

Seventh, I claim regulating the working of the air pump, G, by the movement of the gas holder, L, the lever, R, and wheel, Q, or their substantial equivalents, as specified.

52,877.—Treating Flax, Cotton, Etc.—C. W. Newton and O. G. Newton, Edenburg, Mo.:

We claim the combination on the same bench, for family use, of a picking apparatus, a ginning apparatus, a feeding apron, and a spinning apparatus, all driven from the same treadle motion, substantially as described.

52,878.—Process for Steel Facing Vises.—Tertius S. Norton, Chicopee, Mass.:

I claim the combination of the two processes of brazing and hardening the piece of steel or facing with that of so firmly holding the facing piece of steel to the iron while the hardening process is being carried on, as to prevent the displacement or escape of the brazing metal from between the contiguous surfaces against which it may be.

52,879.—Bedstead.—Charles Perley, New York City:

I claim, First, Connecting the side rails and posts by hinges having a vertical hook or pin, so that the side rails can swing horizontally upon such hinges, substantially as set forth.

Second I claim connecting the head or foot guard to the post by means of hooks and eyes, fitted substantially as specified, so that said foot or head board can be turned into a horizontal or an inclined position as set forth.

Third, I claim the slats, b, and eyes, i, in combination with the hinged side rails, b b, as specified.

52,880.—Machine for Picking Cotton.—William Edgar Prall, Knoxville, Tenn.:

I claim, First, The revolving cylinders or shafts, N, figure 4, covered with a tenacious substance to attract and wind the cotton from the bolls.

Second, The revolving wheels, A, upon which the cylinders or shafts are attached.

Third, The arrangement of a toothed arc, m, for reversing the motion of the cylinders and unwinding the cotton.

52,881.—Sewing-machine Shuttle.—Nelson Read and G. W. Wyckoff, Syracuse, N. Y.:

We claim, First, The lever, C, or its equivalent applied to a shuttle in connection with a spring to act on the center or axis of its bobbin, so as to make pressure thereon in proportion to the fullness of the bobbin for the purpose of regulating tension on the bobbin thread, substantially as shown.

Second, We also claim in combination the lever, C, the spring, H, and the adjusting screw, E, applied to the bobbin of a sewing machine shuttle, substantially as shown.

52,882.—Cleaning Grain.—Richard Redfield, Salem, Ind.:

I claim, First, An inclined laterally oscillating trunk, C, constructed with a roughened bottom for separating foreign substances from grain, substantially as described.

Second, Providing an oscillating separator, C, with an elevation, g, and a suction spout, B', substantially as described.

Third, The combination of the side discharge openings, f f, with an intermediate suction spout, B', substantially as described.

Fourth, The inclined spout, D, in combination with an inclined laterally oscillating trunk or separator, C, having side discharge openings, f f, for the sound grain, and a suction spout, B', substantially as described.

Fifth, The combination of the hopper, A, suction spout, B', substantially as described.

Sixth, Arranging the suction spout, B, so as to communicate with the upper and lower ends of the oscillating separator, C, substantially as described.

Seventh, Providing the means herein described for conducting the grain from the separator, C, backward and delivering it into a smut mill, which consists of a flanged cylinder, F, and a spiked concave, i i, said mill communicating through a chamber, H, with the fan case, substantially as described.

Eighth, The slotted concave, K K, in combination with a suction chamber, H, substantially as described.

Ninth, The combination of the suction spout, K, and suction chamber, H, with the smut mill, substantially as described.

Tenth, The arrangement of the wire-cloth screen, l, outside of the slotted concave, K K, substantially as described.

Eleventh, The combination of the fan, J, air chamber, H, and smut mill, arranged and communicating with each other substantially as described.

Twelfth, The valves, s' t', arranged in the suction spout, B, and in respect to the branch spout, B2, substantially as described.

52,883.—Machine for Dressing Heel Faces of Boots and Shoes.—T. K. Reed, East Bridgewater, Mass.:

I claim the combination of the rotary reducing disk wheel and a means for presenting the face or tread of the heel to the action of said reducing wheel, and for permitting it to be moved across the face of the wheel from the perimeter toward the center, substantially as and for the purpose set forth.

I also claim, in combination with a reducing wheel, the burnishing or polishing wheel operating substantially as set forth.

Also the employment of the guides for entering the rand, insuring the parallelism of the face or tread of the heel to the sole.

52,884.—Apparatus for Securing Buttons to Fabrics.—George Rehfuss, Philadelphia, Pa. Antedated Feb. 16, 1866:

I claim the combination of the pointed roll, b, the movable sleeve, c, with its conical tube, d, and spring, e, the whole being arranged and operating substantially as described.

52,885.—Apparatus for Securing Buttons to Fabrics.—George Rehfuss, Philadelphia, Pa. Antedated Feb. 16, 1866:

First, I claim the lever, E, with its die, G', in combination with the frame, A, and rod, C, the whole being arranged and operating substantially as and for the purpose specified.

52,886.—Bran Duster.—James Richmond, Lockport, N. Y.:

I claim the outside adjustable cleaning brush, E, in combination with a revolving wire cloth cylinder, D, arranged and operating substantially as and for the purposes set forth.

52,887.—Breech-loading Fire-arm.—Benjamin S. Roberts, U. S. A.:

First, I claim in a breech-loading fire-arm the cam, o, so shaped and constructed that while it serves to fire the gun by means of its small projecting spur that strikes against the flange containing the fulminate when the breech piece is brought home to its seat, also half cocks the gun when the breech piece is swung upward after the gun is fired and holds the breech piece in its forward position while the cartridge is being inserted in its chamber in the act of reloading, substantially as described.

Second, In a breech-loading fire-arm I claim the combination of the shoulder, v, and the pin, x, by which the swinging breech piece, if not entirely in its seat, is brought home there in the very act of cocking the piece and thus preventing an accidental discharge before the breech piece is securely locked, substantially as above described.

Third, In a breech-loading fire-arm, intended for cartridges with metallic cases, and having a swinging breech piece with an open space in rear of the chamber for the insertion of the cartridges and the extraction of the cases, I claim the use of ways, b' b', in combination with the hook, R, located between them, all substantially as and for the purpose described.

Fourth, I also claim in such breech-loaders the use of a cam, S, operated by a secondary lever, L, for the purpose of starting the brace, B, from its seat, as shown in figure 5, substantially as and for the purpose above described.

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52,888.—Shirt-bosom Pattern.—Morris Rosenthal, Philadelphia, Pa.:

I claim a shirt bosom, whether attached to the shirt or not, on which is marked or affixed a graduated guide for cutting out the neck piece, all substantially as shown and described.

52,889.—Device for Holding Carriage Springs.—Rufus Rowell and Francis H. Briggs, Boston, Mass.:

I claim the four flanges, B B B B, on the spring seat, A A, substantially as and for the purpose herein described.

Second, The four grooves, c c c c, substantially as and for the purpose herein described.

Third, The bolting of the seat and spring together from E to F, and making a king bolt of the same, substantially as and for the purpose herein described.

52,890.—Churn.—Ira J. Ryerson, Pierceton, Ind.:

I claim the arrangement and combination of the standards, P, guide, Q, with the dasher rod, B, and regulator, G, substantially as described and set forth.

52,891.—Chess Board.—F. C. Schaefer, Dubuque, Iowa:

I claim a chess or checker board composed of four main parts, A B C D, united together in the manner and for the purpose substantially as described.

52,892.—Organ, Etc.—Daniel Schuyler, Buffalo, N. Y.:

First, I claim longitudinal action of the keys, they being so constructed that any one or more of them can be pressed back in the key board at the pleasure of the performer, for the purpose substantially as set forth.

Second, I claim the use of a stop, as shown in the drawing, or any equivalent method of causing the keys to move back in the key board when the usual downward pressure is applied to the key, substantially as and for the purpose set forth.

Third, I claim the use of valves to prevent the loss of air around the push-down pin when arranged substantially as herein described.

52,893.—Manufacture of Illuminating Gas.—Wm. D. Seal, Washington, D. C.:

First, I claim the process herein described of passing the gas as generated over a mass of quicklime, when the gas is generated in the retort where the lime is placed for it to pass through and be purified, substantially as set forth.

Second, The retort constructed, arranged and operating substantially as described, that the gas may be generated and purified in a single retort, as set forth.

52,894.—Power Hammer.—Thomas Shaw, Philadelphia, Pa.:

I claim constructing and operating a hammer in the manner described evident equivalents included.

52,895.—Stop Valve.—Wm. Shedlock, Alfred Shedlock, and George Marshall, Brooklyn (E. D.), N. Y..

We claim the valve, D, attached to a carriage, B, sliding in a direction perpendicular to the valve seat on fixed bearings, C C, and operated by a spindle, G, and cam, E, applied and operating substantially as herein set forth.

52,896.—Photographic Printing Frame.—David Shive, Philadelyhia, Pa.:

I claim in combination with a frame having two parts hinged together as shown, the slides, B B', and screws, C C', the same being constructed and arranged to operate together substantially as and for the purpose described.

I also claim the application of the said guides, a4 a4, to one of the parts, A or A', of a photographic printing frame so as to operate in the manner described for the purpose specified.

52,897.—Manufacture of Lubricating Oil.—Henry T. Slemmer, Norristown, Pa.:

I claim the production of an oil of the gravity as herein set forth, and the rejecting of the first products of the distillation until it approximates thirty-eight degree, 5 Baume hydrometers and subsequent washing and treatment as described.

I also claim as a new manufacture, the lubricating oil prepared substantially as described.

52,898.—Automatic Boiler Feeder.—Thomas J. Sloan, N. Y. City:

I claim the combination of the vessel to be connected with a steam boiler above the high-water mark and below the low-water mark, the throttle valve in the pipe which conveys steam to the steam chest of the pumping engine, the said valve being controlled by a float, the steam chest of a pumping engine for supplying the boiler, and the valve operated by steam and provided with an exhaust, substantially such as described, the combination being substantially such as described and for the purpose specified.

I also claim the devices substantially as herein described for exhausting the steam which operates the steam valve of the engine, to insure the proper working of the valve, and prevent it from slaming, as set forth.

I also claim operating the valve to take the steam by which it is shifted to give steam to the engine by the mechanism, substantially as described, inclosed in the steam chest and extending from the steam chest into the cylinder of the engine to be actuated by the piston, substantially as and for the purpose described.

I also claim the cylinder of the pumping engine with the partition in the middle of its length in combination with the two pistons, one each side of the partition and connected by a piston rod, substantially as described, and for the purpose set forth.

52,899.—Press Plate.—Amor Smith, Cincinnati, Ohio:

I claim the press plate, D, when constructed with perforations and having ropes, E F, woven through the holes and along the faces of the plate, substantially in the manner and for the purpose set forth.

52,900.—Lathes for Turning Ovals.—Frederick Smith, Alleghany City, Pa.:

I claim the arrangement of the bed composed of the plates, k and c, adjustable cam, 4, with its adjusting screw, and stationary shaft, m, said parts being raised and lowered by means of screw, r, and operated by pulley j, substantially as and for the purpose described.

52,901.—Microscope.—Hamilton S. Smith, Gambier, Ohio:

First, I claim the use in a microscope of a reflector arranged above the object so as to condense the light through the lens on the object to be viewed substantially as and for the purpose set forth said light being taken from one side and not transmitted from below.

The adjustable slide, C, in combination with the reflector, B, and case, A, constructed and operating substantially as and for the purpose described.

Third, The arrangement or the adjustable disk, h, of two or more holes of different sizes in combination with aperture, g, in the case, A, and the reflector, B, constructed and operating substantially as and for the purpose set forth.

52,902.—Carpet Bag.—Albert Sonnekalb and John W. Lieb, Newark, N. J.:

We claim the hook, a, the hem, b, and the rod, c, in combination, substantially for the uses and purposes as above described.

52,903.—Plow.—T. A. Stanbury, Saybrook, Ill.:

I claim a supplementary frame, bearing a plow share, to be attached to the beam of an ordinary plow, substantially in the manner and for the purpose set forth.

52,904.—Head Blocks for Saw Mills.—E. H. Stearns, Erie, Pa.:

First, I claim the employment or use of supplemental posts or knees, G,' connected with the main posts or knees, G, by means of wings or arms, H, arranged so as to form proper bearings for the log, crank or timber throughout its entire length, substantially as and for the purpose specified.

Second, The pivoted dog consisting of the arc-shaped bit, a, and the handle stock, b d, constructed and operated substantially as described and represented.

Third, The pivoted or hinged bars, J, attached to the sides, D, notched as shown in connection with the stops, g, on the heads, C, substantially as shown and for the purpose specified.

Fourth, The bars, J, in combination with the gages, L, and graduated slides, D, substantially as and for the purpose set forth.

52,905.—Cultivator.—Andrew J. Stover, Sandyville, Iowa:

I claim the oblique bars, D D, connected to the draft pole, C, and having standard, I, and shares, J, attached as shown, in combination with the plow beams, G G, connected to the bars, D D, and arranged to admit of being turned to give a lateral movement to the shares, L, substantially as and for the purpose set forth.

[This invention relates to a new and improved cultivator of that class in which laterally adjustable plows are used, and the invention consists in a novel arrangement of the parts, whereby the operator has full control over the plows or shares, and the latter rendered capable of being operated while the driver is either walking or riding.]

52,906.—Manufacture of Water-proof Fabric.—Alfred Taylor, Philadelphia, Pa.:

I claim treating paper muslin, linen and other fibrous and textil, fabrics substantially in the manner hereinbefore described with a composition of liquid, silicate of soda, intimately mixed with white oxide of zinc or other similar ingredient or ingredients, capable of forming when applied as described and subsequently dried and insoluble compound therewith and with or without the addition of other coloring matter for the purpose of rendering textile fabric in a high degree water-proof an susceptable of a fine polish, and also of increasing their stiffness and durability.

52,907.—Paper Shirt Bosom.—C. C. Taylor, Springfield, Mass.:

I claim as a new article of manufacture, a paper bosom, having a central plait stitched fast, and having its upper end protrude and provided with a button hole as shown, and having eyelets in the shoulder points for securing it by means of the elastic cord and hook, as shown and described.

52,908.—Knuckle Joint.—Simeon N. Taylor, Horicon, Wis.:

I claim the constructing or forming of the head, C, of the shaft, D, with ribs, or projections, c, both sides of which have a radial position with head in combination with the longitudinal ribs or shoulders, a, of the socket, A, which are formed by making a series of convened recesses or grooves in the socket, the shoulders, a, extending the whole length of the interior of the socket, A, to admit of the tumbling rods, B D, being turned in either direction, that is to say to the right or left as may be desired.

52,909.—Constructing Air-tight Vessels.—T. C. Taylor, Philadelphia, Pa. Antedated Feb. 16, 1866:

I claim an air-tight vessel composed of two table plates or pans or other similar culinary utensils of sheet metal, so united as to be proof against air and moisture, and capable of being readily separated into their separate forms without injury or waste of their original material, substantially as described.

52,910.—Method of Putting Up Caustic Alkali.—T. Chalkley Taylor, Philadelphia, Pa.:

I claim putting up caustic potassa or soda in suitable casks or vessels, each of which is capable of containing more than one block of the alkali, and protecting the same by oil or its equivalent in such a way that a portion of the alkali may be removed for use or sale without exposing the remainder to injury in consequence of such removal.

52,911.—Baling Press.—Charles H. Hartford Jamaica, N. Y.:

I claim the two platens, J O, connected with the levers, M M, as shown in combination with the windlass arrangement composed of the rollers, D D, connected by gearing, E E F, and the chains or ropes, R R, attached to the levers, M, and the rollers, D, substantially as and for the purpose herein set forth.

I further claim in connection with the press as described, the arrangement of the top platen, O, in such a manner that when said platen is fully raised, it may be moved laterally off from the top of the press box and back over the same, in order to facilitate the filling of the press box, substantially as set forth.

[This invention relates to a new and improved baling press of that class in which levers are employed for operating the platens, and it consists in a novel arrangement of the levers, platens and windlass, whereby the labor and necessary manipulation attending the operation of baling is greatly expedited and a powerful press obtained.]

52,912.—Bolt Heading Machine.—Alvah Tucker, Gilford, N. Y.:

First, I claim the combination of the standard, A, pivoted jaw, B, band, H, cam, C, and spring, S.

Second, The combination of the sliding foot or hub, and tapering pin, with the standard, A, and pivoted jaw, B, all constructed substantially as described, when arranged and operating substantially as set forth.

52,913.—Grate Bar.—Lorenzo B. Tupper, N. Y. City:

I claim the bearing bars, a, formed with notches in their upper edges to receive the rib of the grate bars or sections, and prevent sidewise motion, substantially as specified

And in combination therewith, I claim the hook ends, 4, to the grate bars for the purposes and as specified.

52,914.—Basket.—G. Z. Van Riper and M. A. Van Riper, Lagrange, Mich.:

We claim the employment of metal strips, B B, one or more passing under the basket, and having their ends secured to the top hoop of the basket for the purpose of strengthening the same, substantially as specified.

[This invention consists in the employment of metallic hoops, a band passing from the top hoop on one side of the basket, down under the bottom of the same and up on the other side, both ends of such hoop being secured to the top hoop on opposite sides of the basket, whereby the basket is strengthened in many respects.]

52,915.—Machine for Leveling Streets.—Louis Von Froben, Washington, D. C.:

I claim the combination and arrangement of the cog wheels, A D F and G G, bolt, b, and triphammer, H, and the shafts, C and E, with the fall and ratchet, S, substantially as and for the purposes herein specified.

52,916.—Attaching Runners to Wheels and Wagons.—Eugene Ward, N. Y.:

I claim the hinged brace, B, fitted as specified in combination with the runner, A, constructed substantially as specified, so as to be connected to the whole at two points as set forth.

52,917.—Manufacture of Glass.—Richard Washburn.—Monsey, N. Y.:

First, I claim the use of what I term "glass ore" in the manufacture of glass.

Second, Also the use of "glass ore" mixed with soda, ash or other suitable flux, in the manufacture of glass.

Third, The glass produced from what I term "glass ore" as a new article of manufacture.

[This invention consists in the use of what is known by the term "glass ore," for the purpose of manufacturing glass, either alone or mixed with some other flux than soda ash.]

52,918.—Marking Attachment for Sewing Machines.—Mary J. West, Watertown, N. Y.:

I claim the attachment to and combination with a vibrating needle bar, of a marker constructed substantially as herein described the same consisting of a rod clamped to the needle bar combined with a sliding head, whereby the spring foot holding the marking material is adjusted both horizontally and vertically as set forth.

52,919.—Churn.—Amos Westcott, Syracuse, N. Y.:

First, I claim the combination of the bellows, B, with the rod, m eccentric, L, driving wheel, K, pinion, O, attached to the shaft, of the churn, substantially as and for the purpose set forth.

Second, I claim the arrangement of the bellows, B, with the sliding board, H, when the latter if attached chambered and connected with the body of the churn, substantially as set forth.

52,920.—Composition for Graining Leather.—Owen P. Whitman, Lynn. Mass.:

I claim the said composition made of the ingredients and for the purpose substantially as described.

52,921.—Vaccinator.—Amos Whittemore, Cambridgeport, Mass. Antedated Feb. 21, 1866:

I claim the pivoted, slotted lever, e, the notched bar, c c', and spring, d, in combination with the enclosing case, A, substantially as described.

Second, Applying a spring, d, to the instrument in such manner that it will operate upon the bar, c, and lever, e, substantially as described.

Third, Constructing the pivoted and slotted lever, e, with a tooth, e', and a nose, e2, upon one end, in combination with the notched end, c', of the bar, c, substantially as described.

52,922.—Spiral Stair.—William Widmeyer, New York City:

I claim the combination with the frame, A, of the tugs, d e, spira brace, f, and the hollow central hub, B cast with a projecting flange, a, at one end, and a countersink, b, at the other, all as herein described and for the purposes set forth,

[This invention relates to spiral stairs, each step of which is cast solid with a portion of the column or hub, and so that a circular flange or rim projecting from the upper surface of the hub of one strip fits into a corresponding cavity in the lower edge of the hub of the next succeeding hub, and said hubs can be firmly secured together by screws or pins.

52,923.—Ox-bow Pin.—Erastus S. Woodford, Winchester, Conn.:

I claim the combination of the bed plate, B, the pin, C, springs, 1 and 2, and the cap, D, as and so as to operate in the manner and for the purposes specified.

52,924.—Crupper Loop for Saddletrees.—John C. Young, Newark, N. J.

I claim forming the crupper loop as a ring or open frame, in combination with lugs on the tree or seat piece, as set forth, the saddle and tree being united directly to each other by a screw, and retaining the crupper loop between them as specified.

52,925.—Breech-loading Fire Arms.—Hiram Berdan (assignor to the Berdan Fire Arms Manufacturing Company), New York City:

First, I claim a jointed swinging breech piece, when the detached end of the brace is forced or held in position by the hammer or other suitable projection from the hammer shaft, substantially as herein set forth, for the purpose of communicating less strain to the hammer than when an unjointed swinging breech block is used.

Second, The combination of the brace, D, jointed to the swinging breech piece, the hammer and the safety notch, h, in the tumbler, substantially as described, whereby the hammer, while held back from the firing pin, is made to prevent the detached end of the brace from rising above a position in which it locks the breech piece.

Third, A firing pin inserted through the joint pin of the breech piece and attached brace, and securing the said joint pin in place, substantially as herein specified.

Fourth, The elongated hole or holes in the strap, E, or other part of the hinge connection of the swinging breech piece, C, in combination with the circular projection, b, provided on the face of the breech piece to enter the chamber of the barrel, substantially as herein specified, whereby the self-adjustment of the breech piece to the recoil bearing is provided for, and the liability to strain the hinge by any rear or upward tendency of the breech piece is counteracted.

Fifth, I further claim the combination of the spur, f, hook, k, spring, l, and ways, m m, when employed in a breech-loading fire arm having a recoil shoulder, c, in line with and at right angles to the bore, to completely eject a cartridge or shell without elevating the muzzle, substantially as herein set forth.

52,926.—Machine for Cutting Files.—Edward Bucklin, Jr., Providence, R. I., assignor to himself and Lysander Flagg, Jr., Smithfield, R. I.:

I claim the screw, E, operated by the ratchets, H H, and pawls, I I, in combination with the adjustable pin, d, fitted in the eye, D, attached to an arm connected with the slide or carriage all arranged substantially as and for the purpose set forth.

Second, Connecting the eccentric rods, l l, to the pawl arms, g, through the medium of adjustable bars, i, for the purpose of varying the speed of the feed, all constructed and arranged substantially as described.

Third, The cylindrical file bed, K, provided with a series of longitudinal recesses to suit file blanks of different forms, as set forth.

Fourth, The clamp, L, constructed and applied substantially as shown and described, for holding the file blanks in or on to the bed, K.

Fifth, The plate, P, on which the cutter stock, N, is fitted, arranged with springs, S S, and journals, v, in combination with the pattern or shaper, T, at the side of the slide or carriage on which a roller, h', at the lower end of a bar, g, attached to the plate, P, rests, all arranged as shown for the purpose of adjusting the cutter to suit the shape of the file blank, substantially as set forth.

Sixth, The cutter stock, N, fitted to the plate, P, so as to be capable of adjustment thereon, to place the cutter in a proper relative position with the file blank to cut the different cuts required, all constructed and arranged substantially as described.

Seventh, The duplex or double spring, W, arranged with a movable upper part, i, so that said upper part may be turned over the lower part or moved off from it according to the strength of the blow required to be given the hammer.

Eighth, The giving of stronger blows to the hammer intermittently by means of the track, Z, having an irregular upper surface, the pivoted bar, X, with roller, Y, resting upon said track, the rod, A', and lever, B', all arranged to operate substantially in the manner and for the purpose set forth.

Ninth, The cutter, O, fitted in the stock, N, and retained by a spring, a', adjustable substantially in the manner as and for the purpose specified.

52,927.—Harvester.—Owen H. Burdick (assignor to himself and David M. Osborn), Auburn, N. Y.:

First, I claim the combination of the spur, a, with the cam of an independent reel, substantially as and for the purpose described.

Second, In a combined rake and reel, working independent of each other, and on separate tracks, the combination of the track or way upon which the cam of the rake shank travels with the cam of the shank of an independent rake, substantially as and for the purpose described.

Third, An adjustable and controllable track or way for the cam of the rake shank, made and operated by the treadle, substantially as herein set forth and for the purpose described.

Fourth, In a combined rake and reel, the employment of an entirely independent track or way for the cam of the rake shank from that traversed by the cams of the reel beaters, substantially as and for the purpose described.

Fifth, The employment in a harvesting machine having a combined reel and rake, both traversing at all times in different paths, and both revolving around a vertical center, or the mechanism whereby the rakes and reel beaters are made to traverse different paths over the platform, substantially as and for the purpose described.

Sixth, The combination of the reel-beater with its adjustable crank, substantially as and for the purpose describe l.

52,928.—Lemon Squeezer.—Valentin Fogarty, Boston, Mass., assignor to Corn's Callaghan, Boston, and James Birmingham, Roxbury, Mass.:

I claim the within-described lemon squeezer, consisting of the casing, A, with its plunger, C, operated by the screw, B, substantially as set forth.

52,929.—Gas Retort.—Edward Duffee (assignor to himself and John A. Appletree, Jr.), Haverhill, Mass.:

I claim the combination of the guard, C, made substantially as described, or the same and its connection plate, D, with the front, A, of a gas retort furnace, the same being to operate therewith as specified.

I also claim the application of the guard, C, to the furnace mouth door, by means whereby the said door shall be moved or operated by the guard in manner as specified.

52,930.—Wrench.—William Morehouse (assignor to himself and J. Frazer), Buffalo, N. Y.:

First, I claim operating the movable jaw of a wrench, directly by the handle, substantially as described.

Second, The combination of the handle, A, with a segment formed on it, pivoted jaw, B, and a sliding jaw, B', having teeth formed on it, which engage with the pivoted end of the handle, substantially as described.

52,931.—Sinking Tubular Wells.—Milton V. Nobles, Rochester, N. Y., assignor to himself and John C Nobles, Rockford, N. Y.:

I claim using the valve rod, D, to turn the inner tube, so that as

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soon as, or whenever the water enters the tube the pump is complete and ready to be operated without withdrawing anything from the tube or inserting anything therein, suostantially as shown and described.

52,932.—Feed-adjusting Device for Sewing Machines.—George Rehfuss (assignor to himself, C. J. Patterson, E. Vincent, A Hart, M. Moore, A. H. Mitchell and A. H. Reed,) Philadelphia, Pa.:

I claim the concave disk, C, with its slits, i i, and arm, e, constructed and combined with the feed device of a sewing machine, substantially as and for the purpose specified.

52,933.—Magazine Fire Arm.—James D. Smith, Bridgeport, Conn., assignor to Oliver F. Winchester, New Haven, Conn.:

I claim the combination of the guides, d2 d2, with the hooks, a' a', upon the breech pin, L, substantially in the manner and for the purpose set forth.

52,934.—Magazine Fire-arm.—James D. Smith, Bridgeport, Conn., assignor to Oliver F. Winchester, New Haven, Conn.:

I claim the combination of the fixed, A', mortice, D, and carrier block, E, constructed and arranged so as to charge the magazine through the frame and beneath the carrier block, substantially as and for the purpose specified.

52,935.—Clothes Sprinkler.—Wm. E. Staniford (assignor to himself and J. Edwin Sherman, Bucksport, Me,:

I claim a clothes sprinkler made with woolen yarns applied to the part, A, substantially as described.

52,936.—Braiding Machine for Making Three-strand Braids.—John Taggart, Roxbury, Mass., assignor to himself, J. H. Lester, and Charles D. Ellis, Boston, Mass.:

I claim the combination and arrangement of the four springs, K K K K, with the frog, F, arranged with respect to the racer circuit substantially as specified.

I also claim the arrangement and combination of the frog, F, and its four springs, K K K K, with the racers and their operative plates constructed in manner and so as to operate as specified.

I also claim the arrangement and combination of the upright shaft, z, and its three arms, y a' a', the slider, w, and its pawl, v, with the draft rollers, three racers and their operative plates and frog, as specified.

52,937.—Spring Bed Bottom.—Newiel J. Willis (assignor to himself and Ammi Brown), Boston, Mass.:

I claim the combination and arrangement of the round bars, B C, the springs, b, and their straps, a, such being affixed to the frame, A, and the slats, D, substantially as described.

52,938.—Breech-loading Needle Guns.—John Frederick Christian Carle, Hamburg, Germany:

I claim the slide, g, in combination with connecting rod, r, spiral spring, m, upright, s, and lever, t, substantially in the manner and for the purpose herein set forth.

52,939.—Apparatus for Separating Whey from Curd.—Philip Coombes, Liverpool, Eng.:

I claim, in the manufacture of cheese, separating or removing whey from curd by mechanical means or apparatus, consisting of a pump and filter or selve, substantially as herein set forth and illustrated by the accompanying sheet of drawings.

52,940.—Organ, Harmonium, Etc.—William Dawes, Leeds, Eng.:

I claim giving an improved or increased accent or expression to organs, harmoniums, and other harmonious keyed instruments, by imparting to them the mechanical capability of giving or sounding automatically the air (soprano) or melody only (additionally) upon one or more parts, portions or sections, while the other parts of the same instrument are giving or sounding the full chords or harmony as heretofore, both parts or sections receiving at the same time the same first motion, action or influence from the keys and player.

52,941.—Apparatus for the Manufacture of Paper Pulp.—James Easton, Jr., Grove, Southwark, Eng., and Francois Thiry, Huy, Belgium:

We claim the passage, E, and movable fire boxes or cars, B, in combination with two or more boilers, A Al A2, constructed and operating substantially as and for the purpose set forth.

Second, The radial arms, d, and the chains, d', in combination with the boilers, A Al A2, and with suitable gear intended to give the shaft from which the arms, d, extend, a revolving motion, substantially as and for the purpose described.

52,942.—Dyeing Yarn, Etc.—Alfred Paraf, Mulhouse, France:

I claim as oxydizing agents in dying and printing, the use of the oxygen compounds of chlorine more soluble than those combined with potash, such as chlorate of soda, chlorate of ammonia, chlorate of barytes, chlorate of strontian, chlorate of lead, chlorate of lime, chlorate of magnesia, chlorate of alumina, chlorate of zinc, chlorate of nickel, chlorate of copper, chlorate of chrome, chlorate of manganese and chlorate of potash, when decomposed by hydrofluo silicic acid, either for preparing textile fibers to be printed with steam colors or with aniline black, catechu brown,. and similar colors, or by mixing them with colors and dyeing both to oxydize; and to the aniline black color in order to hasten the oxydation, I find advantage in adding 2½ to 3 per cent of a salt of protoxide of iron or copper, and print such colors upon cloth prepared in one or more of the above-mentioned soluble chlorates.

I also claim the use of the chlorites and hypochlorites in the place of the chlorates in dyeing and printing.

And also the preparation of animal fibers in copper salts mixed with chloric and chromic acid salts, to enable them to receive aniline blacks or other similar colors for dyeing and printing.

52,943.—Compound for Fining, Purifying, and Mellowing Spirituous Liquors.—William Thompson, Dublin, Ireland:

I claim an improved spirituous or vinous compound for fining, purifying and mellowing spirituous liquors, containing an admixture of prunes, saccharine matter, water, rectified spirits of wine, and extract of prunes, prepared in manner and for the purposes substantially as hereinbefore set forth.

52,944.—Wood-bending Machine.—Edward C. Harris, New York City:

First, I claim bending the fronts of pianos, whether formed of thin sheets of wood glued together and veneered as described, or in one piece and veneered, by forcing such front or block into the concave bed, by applying power to blocks, A, and holding the stuff thus bent in position by clamps, B and B', operating on the bending blocks in combination with the heated bending plates, substantially as set forth.

Second, in combination with the above, I further claim the movable supplementary sections, C, arranged and employed in the manner and for the purposes specified.

52,945.—Fire Boxes of Steam Generators.—Charles F. Jauriet, Aurora, Ill., assignor to himself and A. J. Ambler, Chicago, Ill.:

First, I claim the water bridge which is arranged as specified, and is formed of a flat sheet of metal bent into the form of a semi-tube, with flat surfaces at top and bottom, and applied to a fire box which has those portions of its side and back walls included within the area of the semi-tube entirely cut away, so that there is a perfectly free passage for the water in at the back and out at the sides of the bridge, substantially in the manner and for the purpose described.

Second, The combination of the stay bolts with the semi-tube water bridge, substantially as and for the purpose described.

Third, The combination of the through stay bolts, semi-tube water bridge, and the outer jacket of the fire box, substantially as and for the purpose described.

52,946.—Apparatus for Generating Gas for Illuminating Samuel N. Chamberlin, Abington, Mass.:

I claim the reservoir with not less than eight pans or shelves contained therein, when constructed with a discharge pipe and otherwise, as above described, and used as above described for carbureting atmospheric air forced through it by this change produced in such air by this process and by other means.

I claim the column or vessel, A, with a series of pans, a, openings b, and discharge pipe, d, as herein described.

52,947.—Pump for Oil Wells.—Walter S. Wilkinson, Baltimore, Md.:

I claim the cone, F, attached to a hollow screw, H, in combination with two or more wedges, D, operated in the manner and for the purposes substantially as herein set forth.

Second, I also claim the combination and arrangement of the packing cylinder, R, and the screw, H, and the coupling, L, of the piston pipe B, as herein described and for the purpose set forth.

REISSUES.

2,181.—Hose Coupling.—Ralph J. Falconer, Washington, D. C. Patented June 7, 1853:

I claim, First, The hose coupling consisting of two parts so constructed and applied that they shall be secured when brought together by a movement transversely to the direction of the water course, as set forth.

Second, The means herein shown and described by which the parts of the coupling can be linked or held in position, to advance and complete the joint, as set forth.

Third, A hose coupling in which one of the parts is set or pressed up against a washer imbedded in or permanently secured to the face of the other part, as herein set forth.

DESIGNS.

2,266.—Top Plate of a Watch.—F. A. Giles, New York City.

2,267.—Alphabet of Letters.—William H. Page, (assignor to William H. Page & Co.), Norwich, Conn.

2,268 and 2,269.—Trade Mark.—Joseph Schedler, Hudson City, N. J., assignor to The American Lead Pencil Company, New York City. Two patents.

2,270, 2,271, and 2,272.—Plates of a Stove.—Garrettson Smith and Henry Brown (assignors to Abbott & Noble), Philadelphia, Pa. Antedated Jan. 30, 1866. Three patents.

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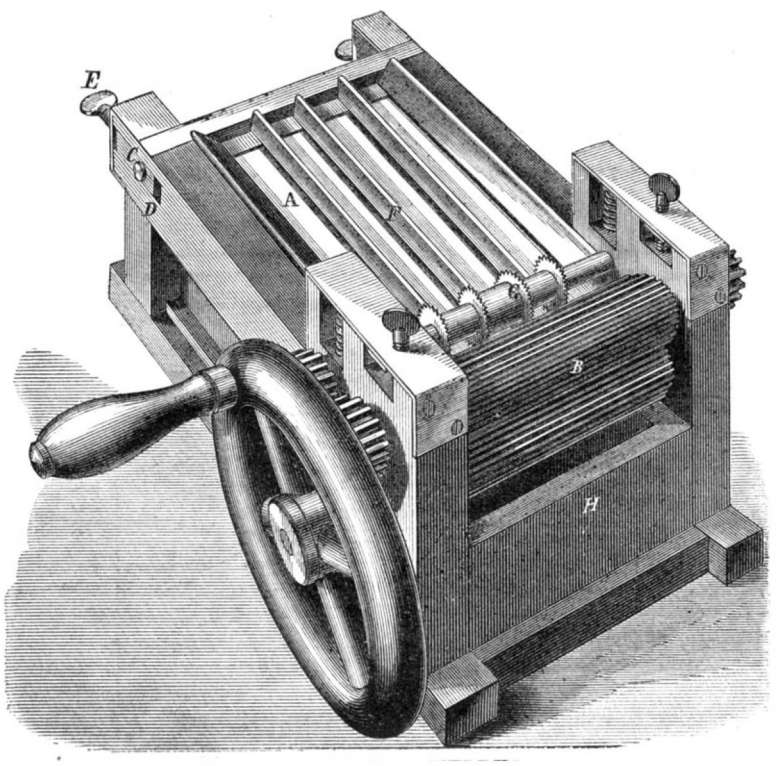
Improved Pea Sheller.

Where large quantities of peas and beans have to be shelled, a great deal of time is wasted or consumed which might be devoted to more important business. Inasmuch, however, as it is a very necessary duty, machines have been devised for the purpose which do it with great rapidity. In these it is only necessary to place the pods on an endless apron, when they are carried in between rollers, split open, and the contents delivered in a box below. The engraving published herewith represents such a machine.



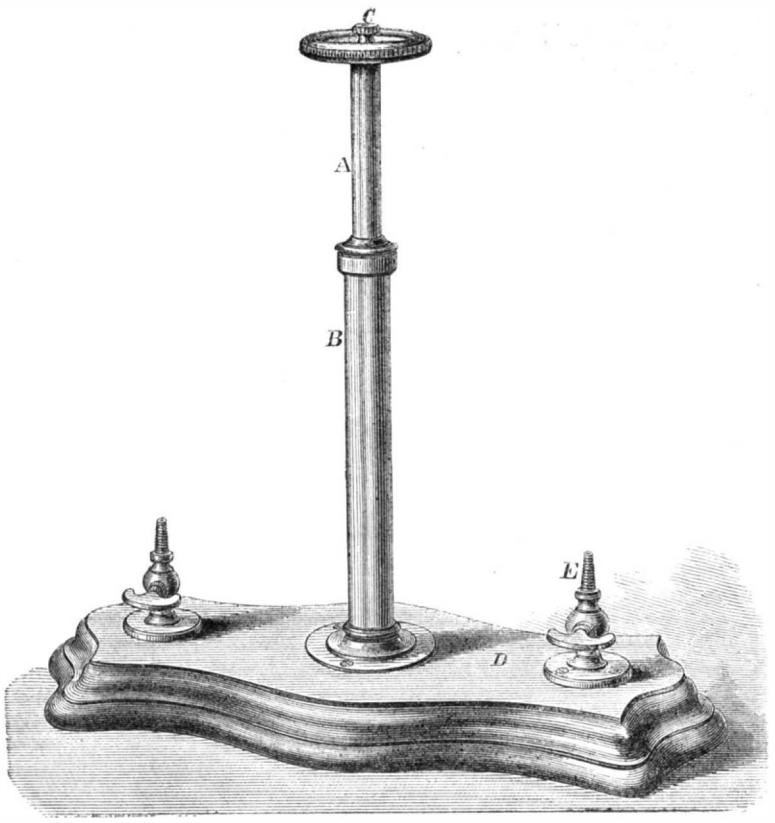
LEWIS'S PEA SHELLER.

The endless apron spoken is at A, and passes over two rotating shafts, one at each end. One of these is driven by a gear wheel meshing into another on the end of the splitting rollers, B, and the other shaft runs in a box, C, at the extreme end of the machine. This box is capable of being moved in a slot, D, by the screw, E, so that as the apron becomes slack by use it may be tightened without interfering with the gearing which drives it. Just over the endless apron are guides, F, which serve to direct the peas and cause them to be delivered straight to the feed rollers, G. These are also driven by gears, and are serrated on the edge so as to catch the pods as they are presented. They also partially split or tear them, so that they are easily ruptured by the fluted rolls, B, which perform the last operation—that of completely opening the pods so that the peas or beans fall out into the case, H, below, from which they are readily removed. The distance between the rollers is regulated by the thumb screw above them, and the serrated feeding apparatus has light springs above each bearing to keep them to their work, and at the same time permit them to rise and fall.

Patented through the Scientific American Patent Agency Jan. 30, 1866. For further information address W. K. Lewis, No. 93 Broad street, Boston, Mass.

Improved Pressure Test.

This engraving represents a new instrument for testing steam gages. It is without some objections which apply to the common force pump with a reciprocating plunger and a reservoir, as it is compact, clean in operation, and without valves. Simplicity itself is embodied in this apparatus, for there are but two parts or different details of importance, and these are seen at a glance—the plunger, A, working in the chamber, B; the plunger screws into the barrel over an upright screw, secured at the bottom. The plunger is hollow, and water, being poured in through an opening at the top (which is closed by a small screw, C), is forced by the descent of the plunger into small pipes underneath the bed plate, D. These pipes communicate with the tubes and stop cocks, E, on which the gages to be tested are fixed. One tube carrying the standard gage, the other the one to be tested. As water is incompressible, it follows that the pressure shown on one gage will be the same on the other, provided the passages are equal in point of size, smoothness, and free from obstructions. This is an extremely convenient instrument for master mechanics and others to test their gages by. It was patented October 4, 1864, by Shaw & Justice. For further information address Philip S. Justice, 42 Cliff street, New York, or 14 North Fifth street, Philadelphia.



JUSTICE'S PRESSURE TE S.

Tubular Boilers.

We are glad to see our cotemporaries taking up this question, and calling upon not only the public to stop patronizing boats on which they are used, but demanding that the inspectors order them removed from the vessels. The indignant feelings aroused against boats which continue to employ them is not dying out among the people as we were afraid it would, but seems daily growing stronger; and even the boatmen themselves are refusing to work on steamers in which they are. We heard of a pilot on board one of the Atlantic and Mississippi Companys boats who threw up his position at Vicksburg, and returned to this city yesterday, being afraid to remain longer on board.

The underwriters held a meeting here to take into consideration the propriety of following in the footsteps of the Louisville Board in refusing to insure steamboats using tubular boilers, but we are sorry to say that they have not adopted this course as yet. This decision, combined with the popular sentiment against them, would soon cause the removal of all such infernal machines. One reason assigned for the non-action of the New Orleans Board of Underwriters is the fact that the Atlantic and Mississippi Steamship Company, who owned the exploded boats Missouri and W. R. Carter, took their own risks, and as there are but three boats in the New Orleans trade except such as belong to this line which have the tubular boiler, no necessity exists for the board in this city to adopt resolutions of the kind.

A gentleman who left St. Louis a few days ago informs us that two tubular-boiler boats were at that port announced for New Orleans, but it was almost impossible for them to get either freight or passengers. Our informant states that travelers went on board, and their first question was invariably, "Have you got tubular boilers?" Upon receiving an affirmative answer, off they would go. These are the best means that can possibly be adopted for throwing such dangerous contrivances out of use. We hope travelers and shippers at other points will do likewise, until there is no such thing in the southern or western rivers, except the exploded ones at the bottom, as a tubular boiler.—*New Orleans True Delta.*

One of the annoyed remarks:—"I have often observed at public entertainments, that when there is anything to be seen, and everybody wants particularly to see it, everybody immediately stands up and effectually prevents anybody from seeing anything."

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